Vol. 1006 Number 3

OFFICIAL GAZETTE

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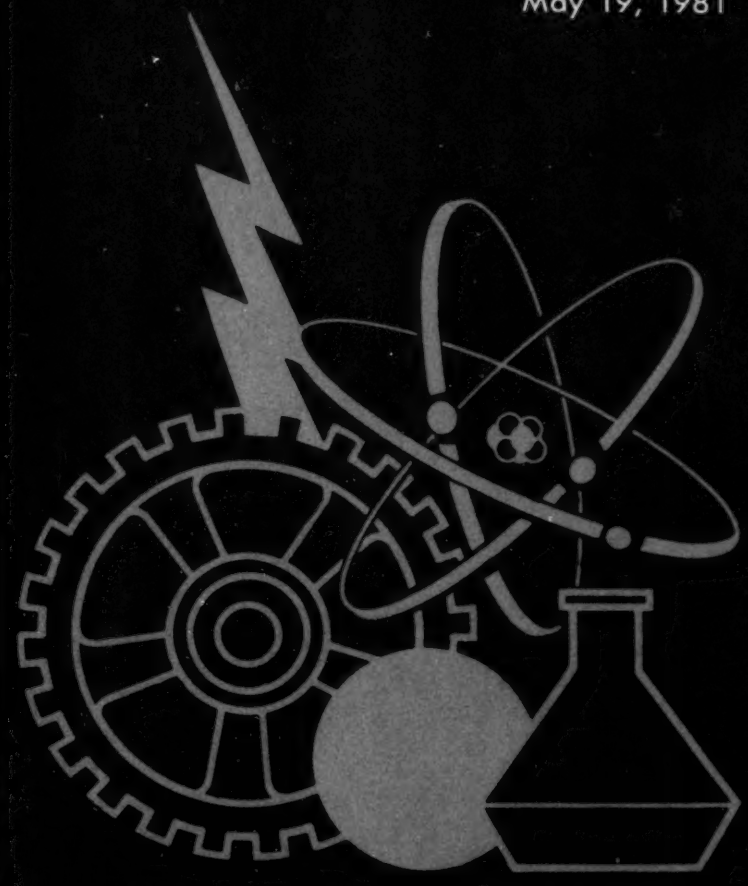
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

May 19, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

May 19, 1981 Volume 1006 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT, consult Chapter 1800 of the Manual of Patent Examining Procedure and notices 90–95 in the consolidated listing of notices appearing in the Official Gazette of Jan. 6, 1981.

The PCT fees in effect after May 19, 1981 are as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Basic Fee (for the first 30 sheets of an international application)	215.00
Basic Supplemental Fee (for each sheet over 30)	4.00
International Designation Fee (for each State for which a national patent is sought, or group of States for which the same regional patent is sought)	50.00

RENE D. TEGTMEYER,
Assistant Commissioner for Patents.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

3,414,928, Re. S.N. 213,181, Filed Dec. 4, 1980, Cl. 15/118, COMBINATION SPONGE AND SCOURER, Jerome H. Lemelson, Owner of Record: *Inventor,* Attorney or Agent: Kenneth J. Stempler, Ex. Gp.: 242

4,144,742, Re. S.N. 164,051, Filed June 30, 1980, Cl. 73/45.1, MACHINE FOR TESTING BOTTLES, Dieter K. Schmidt, et al., Owner of Record: *New Century Beverage Co., San Francisco, Calif.,* Attorney or Agent: Edward B. Gregg, Ex. Gp.: 244

4,148,237, Re. S.N. 228,306, Filed Jan. 26, 1981, Cl. 83/78 TERMINAL FORMING AND INSTALLING APPARATUS, Maurice H. Brown, Owner of Record: *Inventor,* Attorney or Agent: James B. Kinzer, et al., Ex. Gp.: 323

4,183,916, Re. S.N. 223,312, Filed Jan. 8, 1981, Cl. 424/54, ORAL COMPOSITIONS, Maria Rodon, Owner of Record: *Beecham Inc., Clifton, N.J.,* Attorney or Agent: Albert L. Jacobs, et al., Ex. Gp.: 125

4,184,400, Re. S.N. 230,348, Filed Jan. 30, 1981, Cl. 84/1.03, ELECTRONIC MUSICAL INSTRUMENT UTILIZING DATA PROCESSING SYSTEM, Kuji Niimi, Owner of Record: *Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan,* Attorney or Agent: W. Robert Spensley, et al., Ex. Gp.: 217

4,190,477, Re. S.N. 227,527, Filed Jan. 22, 1981, Cl. 156/244.11, POUCH, William F. Ossian, et al., Owner of Record: *American Can Co., Greenwich, Conn.,* Attorney or Agent: Robert P. Auber, et al., Ex. Gp.: 161

4,208,144, Re. S.N. 234,574 Filed Feb. 13, 1981, Cl. 401/192, COSMETIC APPLICATOR WITH TRANSPARENT CONTAINER PORTION, Eric J. Idec, et al., Owner of Record: *Eyelet Specialty Co., Inc., Wallingford, Conn,* Attorney or Agent: Roy C. Hopgood, et al., Ex. Gp.: 337

4,212,158, Re. S.N. 227,989, Filed Jan. 23, 1981, Cl. 368/80, ELECTRONIC TIMEPIECE, Munetaka Tamaru, Owner of Record: *Citizen Watch Co., Ltd., Tokyo, Japan,* Attorney or Agent: Terrell C. Birch, et al., Ex. Gp.: 217

PATENT NOTICES

Certificates of Correction for the Week of May 19, 1981

Re. 30,352	4,228,220	4,241,769	4,249,512
3,767,649	4,228,772	4,242,130	4,249,687
3,985,265	4,229,724	4,242,200	4,249,718
4,026,909	4,230,724	4,242,268	4,249,883
4,072,112	4,230,730	4,243,242	4,249,985
4,076,067	4,230,796	4,243,507	4,250,081
4,097,156	4,230,865	4,243,555	4,250,131
4,104,215	4,231,018	4,243,737	4,250,170
4,107,427	4,231,049	4,243,785	4,250,281
4,107,785	4,231,636	4,243,902	4,250,336
4,112,726	4,231,644	4,244,097	4,250,378
4,117,332	4,231,728	4,244,156	4,251,192
4,121,238	4,231,927	4,244,422	4,252,185
4,126,413	4,232,585	4,244,533	4,252,221
4,126,690	4,233,844	4,244,775	4,252,757
4,126,693	4,234,129	4,244,844	4,252,761
4,146,630	4,234,758	4,244,850	4,252,771
4,147,390	4,234,797	4,244,951	4,252,787
4,148,752	4,235,779	4,245,221	4,252,801
4,156,088	4,236,049	4,245,294	4,252,883
4,159,776	4,236,213	4,245,372	4,252,893
4,161,367	4,236,991	4,245,478	4,252,901
4,166,273	4,237,110	4,245,925	4,252,954
4,187,547	4,237,129	4,246,144	4,253,096
4,193,800	4,237,237	4,246,244	4,253,144
4,203,673	4,237,369	4,246,364	4,253,146
4,204,922	4,237,459	4,246,907	4,253,172
4,205,979	4,237,763	4,246,915	4,253,205
4,211,092	4,238,099	4,247,015	4,253,362
4,211,539	4,239,141	4,247,091	4,253,414
4,212,946	4,239,371	4,247,197	4,254,158
4,213,237	4,239,553	4,247,505	4,254,265
4,215,055	4,239,575	4,247,673	4,254,854
4,217,603	4,239,686	4,247,857	4,255,203
4,223,105	4,239,777	4,248,075	4,255,388
4,223,479	4,239,809	4,248,214	4,255,476
4,223,934	4,239,981	4,248,219	4,255,559
4,224,227	4,240,146	4,248,791	4,255,567
4,224,382	4,241,236	4,248,870	4,256,998
4,224,648	4,241,375	4,249,118	
4,228,154	4,241,618	4,249,416	

Disclaimers

3,379,612.—*George De Stevens,* and *Lincoln Harvey Werner,* Summit N.J. PHARMACEUTICAL COMPOSITIONS OF 6-CHLORO-7-SULFAMYL-3, 4-DIHYDRO-2H-[1,2,4]-BENZOTHIADIAZINE 1, 1-DIOXIDE AND AN INDOLE ALKALOID OF THE APOCYNACEAE FAMILY. Patent dated Apr. 23, 1968. Disclaimer filed Feb. 20, 1981, by the assignee, *Ciba-Geigy Corp.*

The term of this patent subsequent to Mar. 31, 1981, has been disclaimed.

3,499,082.—*George De Stevens,* Woodland Park, Summit, and *Lincoln Harvey Werner,* Summit, N.J. HYPOTENSIVE COMPOSITIONS CONTAINING A 3,4-DIHYDRO-1,2,4-BENZO—THIADIAZINE-1,1-DIOXIDE, A HYDRAZINO—PHTHALAZINE AND AN INDOLE ALKALOID OF THE APOCYNACEAE FAMILY. Patent dated Mar. 3, 1970. Disclaimer filed Feb. 20, 1981, by the assignee, *Ciba-Geigy Corp.*

The term of this patent subsequent to Mar. 31, 1981, has been disclaimed.

3,515,786.—*George De Stevens,* Woodland Park and *Lincoln Harvey Werner,* Summit, N.J. HYPOTENSIVE COMPOSITIONS CONTAINING A 3,4-DIHYDRO-1,2,4-BENZOTHIADIAZINE-1,1-DIOXIDE AND A HYDRAZINO PHTHALAZINE. Patent dated June 2, 1970. Disclaimer filed Feb. 20, 1981, by the assignee, *Ciba-Geigy Corp.*

The term of this patent subsequent to Mar. 31, 1981, has been disclaimed.

3,728,058.—*James E. Wheeler,* Roanoke, Va. PLASTIC MELT TEMPERATURE CONTROL. Patent dated Apr. 17, 1973. Disclaimer filed Feb. 26, 1981, by the inventor, the assignee, *General Electric Co.,* consenting

Hereby enters this disclaimer to claim 1 of said patent.

3,956,540.—*Albert J. Laliberte,* S. Woodstock, Conn. and *Armand DeAngelis,* Southbridge, Mass. METHOD OF COATING ARTICLES. Patent dated May 11, 1976. Disclaimer filed Feb. 25, 1981, by the assignee, *Omnitech Inc.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,980,927.—*Peter Eduard Haferl,* Adliswil, Switzerland. DEFLECTION CIRCUIT. Patent dated Sept. 14, 1976. Disclaimer filed Feb. 24, 1981, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1, 2, 3 and 4 of said patent.

3,987,414.—*Alois Vaclav Tuma,* Schlieren, Switzerland. DIGITAL REMOTE CONTROL FOR ELECTRONIC SIGNAL RECEIVERS. Patent dated Oct. 19, 1976. Disclaimer filed Mar. 27, 1981, by the assignee, *RCA Corp.*

Hereby enters this disclaimer to claims 1, 2, 3, 4 and 6 of said patent.

4,151,142.—*Frederick L. Herman,* Allentown and *Dale Davis Dixon,* Kutztown, Pa. WET ADHESION EMULSIONS OF POLYMER RESINS SYSTEMS EMPLOYED IN WATER-BASED PAINT AND COATING COMPOSITIONS COMPRISING AS A COMPONENT THEREOF MONOMER CONTAINING AN ETHYLENIC DOUBLE BOND AND A UREIDO GROUP POLYMERIZED THEREIN. Patent dated Apr. 24, 1979. Disclaimer filed Mar. 16, 1981, by the assignee, *Air Products and Chemicals, Inc.*

Hereby enters this disclaimer to claims 1, 2 and 11-14 of said patent.

4,216,108.—*Francis J. Sels,* Kontich; *Hendrik E. Kokelenberg, Merksem* and *George F. van Veelen,* Mortsel, Belgium. HARDNEING SOLUTION FOR PROTEINACEOUS MATERIALS. Patent dated Aug. 5, 1980. Disclaimer filed Mar. 18, 1981, by the assignee. *Agfa-Gevaert, N. V.*

Hereby enters this disclaimer to all claims of said patent.

Dedication

4,117,132.—Adolf Seebach, Zurich, Switzerland. PROCESS FOR THE PRODUCTION OF STABILIZED PURE THEOPHYLLINE IN NEUTRAL, AQUEOUS SOLUTION. Patent dated Sept. 26, 1978. Dedication filed Feb. 24, 1981, by the assignee, *Dr. Adolf Seebach, A. G.*

Hereby dedicates to the Public the remaining term of said patent.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE ARMY/OTJAG

Chief, Intellectual Property Division
Room 2D 444, Pentagon
Washington, D.C. 20310

Patent application 6-184,456. Electronically Tuned Gunn Oscillator and Mixer Including the Same. Filed Sept. 5, 1980.

Patent 4,177,353. RFI Shielded Doors with Inflatable Gaskets. Filed Mar. 18, 1977. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,187,106. Process for Making Phase Holograms. Filed Mar. 23, 1979. Patented Feb. 5, 1980. Not available NTIS.

Patent 4,194,938. Prestressed Article. Filed May 15, 1978. Patented Mar. 25, 1980. Not available NTIS.

Patent 4,195,571. Modular Wheel Dispenser. Filed Apr. 2, 1979. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,195,931. Clear Air Turbulance Detector. Filed May 18, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,219. Method of Extending the Storage Life in the Frozen State of Precooked Foods and Product Produced. Filed Nov. 9, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,196,399. Repetitively Pulsed, Cold Cathode E-Beam, Self-Switch Laser, Filed Jan. 9, 1978. Patented Apr. 1, 1980. Not available NTIS.

Patent 4,197,466. Gas Compression Infrared Generator. Filed Nov. 1, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,500. Automatic Channel Selection. Filed Dec. 22, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,666. Dual Caliber Revolver. Filed Apr. 24, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,015. Ideal Trajectory Shaping for Anti-Armor Missiles via Time Optimal Controller Autopilot. Filed May 30, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,219. Air Inlet Grille for Engine Compartment. Filed Nov. 22, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,225. Microchannel Plate in Wall Fabrication, Method and Apparatus. Filed Apr. 20, 1979. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,198,644. Tunnel Diode. Filed June 9, 1978. Patented Apr. 15, 1980. Not available NTIS.

Patent 4,200,608. Detector for Fumes of Hydrazine and Its Derivatives. Filed June 15, 1978. Patented Apr. 29, 1980. Not available NTIS.

Patent 4,201,474. Variable Angle of Incidence Reflectometer with a Continuous Read Out. Filed Aug. 7, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,623. Method for Making Epitaxial Silicon Crystals with Uniform Doping Levels. Filed May 23, 1978. Patented May 6, 1980. Not available NTIS.

Patent 4,201,989. Wideband Antenna with Frequency Dependent Ferrite Core Inductor Filed Apr. 11, 1979. Patented May 6, 1980. Not available NTIS.

Patent 4,202,104. HCL or DCL Chemical Laser Using Laser Inducer Chemistry. Filed July 24, 1978. Patented May 13, 1980. Not available NTIS.

Patent 4,202,269. Fuze Mine Anti-Personnel. Filed Oct. 15, 1958. Patented May 13, 1980. Not available NTIS.

Patent 4,202,515. Two Tone Tracker. Filed July 5, 1978. Patented May 13, 1980. Not available NTIS.

Patent 4,202,714. Ballistic Modifiers and Synthesis of the Ballistic Modifiers. Filed Dec. 20, 1972. Patented May 13, 1980. Not available NTIS.

Patent 4,203,117. Dual Beam Line Scanner for Phased Array Applications. Filed Sept. 28, 1978. Patented May 13, 1980. Not available NTIS.

Patent 4,203,974. Stable Aqueous Foam Formulation, and Method of Use Thereof for Visual Obscuration and Area Denial. Filed Mar. 15, 1978. Patented May 20, 1980. Not available NTIS.

Patent 4,204,926. Method for the Removal of Phosgene Impurities from Boron Trichloride. Filed Mar. 16, 1979. Patented May 27, 1980. Not available NTIS.

Patent 4,205,283. Signal Delay System. Filed Oct. 10, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,205,331. Infrared Optical Devices of Layered Structure. Filed June 9, 1978. Patented May 27, 1980. Not available NTIS.

Patent 4,206,705. Electric Initiator Containing Polymeric Sulfur Nitride. Filed June 19, 1978. Patented June 10, 1980. Not available NTIS.

Patent 4,208,638. HF or DF Chemical Laser Using Laser Induced Chemistry. Filed July 24, 1978. Patented June 17, 1980. Not available NTIS.

Patent 4,208,667. Controlled Absorption in Heterojunction Structures. Filed June 9, 1978. Patented June 17, 1980. Not available NTIS.

Patent 4,208,948. High Efficiency Propulstion System. Filed Nov. 22, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,208,967. Squib Design. Filed May 15, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,209,351. Ambient Cured Smokeless Liner/Inhibitor for Propellants. Filed June 5, 1978. Patented June 24, 1980. Not available NTIS.

Patent 4,209,786. Near Carrier AM-FM Calibration Technique. Filed Jan. 15, 1979. Patented June 24, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP
1900 Half St., S.W.
Washington, D.C. 20234

Patent 4,232,240. High Piezoelectric Coupling X-Cuts of Lead Potessium Niobate, $Pb_2KNb_5O_{15}$, for Surface Acoustic Wave Applications. Filed May 31, 1979. Patented Nov. 4, 1980. Not available NTIS.

Patent 4,233,249. Method for the Preparation of Alkali Metal Salts of Dinitromethane. Filed Apr. 26, 1979. Patented Nov. 11, 1980. Not available NTIS.

Patent 4,233,250. Process for Synthesizing the Alkali Metal Salts of Dinetromethane. Filed Apr. 26, 1979. Patented Nov. 11, 1980. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Program Agreements and Patent Branch
Administrative Service Division Federal Building
Science & Education Administration
Hyattsville, Md. 20782

Patent 4,243,686. Process for Improving the Palatability of Straw for Animal Feed. Filed May 30, 1979. Patented Jan. 6, 1981. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

National Institutes of Health
Chief, Patent Branch
Westwood Building
Bethesda, Md. 20205

Patent 4,239,744. Patent. Filed Oct. 10, 1978. Patented Dec. 16, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Director, Navy Patent Program/
Patent Council for the Navy
Office of Naval Research
Code 302
Arlington, Va. 22217

Patent 4,188,096. Acousto-Optical Transducer. Filed Apr. 2, 1976. Patented Feb. 12, 1980. Not available NTIS.

Patent 4,227,249. Injected Coded Reference for Adaptive Array Systems. Filed Aug. 9, 1976. Patented Oct. 7, 1980. Not available NTIS.

Patent 4,228,407. Ion-Beam Excited Gas Laser. Filed Aug. 23, 1978. Patented Oct. 14, 1980. Not available NTIS.

Patent 4,228,408. Pulsed Cyclic Laser Based on Dissociative Excitation. Filed Oct. 23, 1978. Patented Oct. 14, 1980. Not available NTIS.

Patent 4,229,711. Metal Dihalide Photodissociation Cyclic Laser. Filed Aug. 23, 1978. Patented Oct. 21, 1980. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters
NASA Code GP-4
Washington, D.C. 20546

Patent application 6-153,245. Fiber Optic Crossbar Switch for Automatically Patching Optical Signals. Filed May 27, 1980.

Patent application 6-178,193. Acoustic Tooth Cleaner. Filed Aug. 14, 1980.

Patent application 6-178,195. Hot Foil Transducer Skin Friction Sensor. Filed Aug. 14, 1980.

Patent application 6-182,881. Method of and Apparatus for Damping Nutation Motion with Minimum Spin Axis Attitude Disturbance. Filed Aug. 29, 1980.

Patent application 6-189,234. Process for Preparing High Temperature Polyimide Film Laminates. Filed Sept. 22, 1980.

Patent application 6-195,223. Miniature Spectrally Selective Dosimeter. Filed Oct. 8, 1980.

Patent application 6-195,227. Interferometric Angle Monitor. Filed Oct. 8, 1980.

Patent application 6-195,228. Multiprism Collimator. Filed Oct. 8, 1980.

Patent application 6-199,765. Three Phase Power Factor Controller. Filed Oct. 23, 1980.

Patent application 6-199,766. Off-Axis Coherently Pumped Laser. Filed Oct. 23, 1980.

Patent application 6-199,769. Nicral Ternary Alloy Having Improved Cyclic Oxidation Resistance. Filed Oct. 23, 1980.

Patent application 6-200,634. Curved Film Cooling Admission Tube. Filed Oct. 27, 1980.

Patent application 6-206,506. Non-Contacting Power Transfer Device. Filed Nov. 13, 1980.

Service by Publication
Mikhail B. Serkh

In accordance with 37 CFR 1.47(a) (Rules of Practice in Patent cases), notice is hereby given of the filing on May 10, 1978, of an application for patent entitled "Apparatus for Continuous Temperature Measurement of the Dew Point of Flue Gases" on behalf on Mikhail B. Serkh whose last known address is in Moscow, U.S.S.R. The application was made in compliance with 37 CFR 1.47(a) and 35 U.S.C. 116, second paragraph by Mikhail Al Pozin without execution by the said Mikhail B. Serkh.

Any action to be taken by the said Mikhail B. Serkh in connection with the said application must be taken within thirty (30) days of the publication of this notice.

RENE D. TEGTMEYER
Acting Commissioner of
Patents and Trademarks.

Patent Suits

Notices under 35 U.S.C 290; Patent Act of 1952

3,056,836, U.S. Philips Corporation, ARALKYLAMINES AND METHODS OF PREPARATION THEREOF, **filed** Sept. 13, 1978, D.C.N.J. (Trenton), Doc. 782246, *Mead Johnson & Co. and U.S. Philips Corp.* v. *West-Ward, Inc.* Stipulation and Order dismissing action, without costs, **filed** Jan. 22, 1981. **Same, filed** July 16, 1975, D.C.N.J. (Newark), Doc. 75-1230, *Mead Johnson & Co. and U.S. Philips Corp.* v. *Premo Pharmaceutical Labs.* Stipulation and Order dismissing action, without costs, filed Feb. 5, 1981.

3,185,364, Ampex Corp., DRIVE SYSTEM FOR TAPE TRANSPORT SYSTEM; **3,318,545, same,** WEB TRANSPORT SYSTEM, **filed** Nov. 19, 1979, U.S. Court of Claims (Wash., D.C.), Doc. 521-79C, *Ampex Corp.* v. *The United States.*

3,318,545. (See 3,185,364.)

3,387,786, Robert Rynberk and Virginia Rynberk, doing business as Valley View Specialties, DIVIDER AND SPRINKLER COMBINATION, **filed** June 24, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 3259, *Richco Plastic Co.* v. *Robert Rynberk and Virginia Rynberk, doing business as Valley View Specialties.* Plaintiff is restrained from infringing Defendant's patent. Oct. 17, 1980. **Same, filed** Nov. 25, 1980, D.C., E.D. Mich. (Bay City), Doc. 80-10185, *Robert and Virginia Rynberk, doing business as Valley View Specialties* v. *Richard Januszewski, et al., doing business as Commercial Products.*

3,409,579, Ashland Oil, Inc., FOUNDRY BINDER COMPOSITION COMPRISING BENZYLIC ETHER RESIN, POLYISOCYANATE AND TERTIARY AMINE; **3,676,392, same,** RESIN COMPOSITIONS, **filed** Nov. 14, 1978, D.C., E.D. Wis. (Milwaukee), Doc. 78-731, *Ashland Oil, Inc.* v. *C E Cast Industrial Products Combustion Engineering, Inc.* Plaintiff's notice of dismissal filed Oct. 3, 1979.

3,524,613, Pioneer Parachute Co., Inc., FLEXIBLE GLIDING WING, **filed** May 20, 1976, D.C.N.J. (Camden), Doc. 76-0932, *Pioneer Parachute Co., Inc.* v. *Para-Flite, Inc.* Order dismissing complaint filed Oct. 24, 1979.

3,557,268, Netlon Ltd., EXTRUSION OF PLASTIC NETTING; **3,674,898,** Conwed Corp., METHOD FOR BIAS CUTTING A TUBULAR NET, **filed** Sept. 10, 1980, D.C., W.D.N.Y. (Buffalo), Doc. 80-845E, *Conwed Corp.* v. *E. I. DuPont de Nemours & Co., Inc. and Netlon Ltd.*

3,659,284, Sanders Associates, Inc., TELEVISION GAMING APPARATUS; **Re. 28,507, same, filed** May 13, 1980, D.C., N.D. Ill. (Chicago), Doc. 80 C 2409, *Sanders Associates, Inc.* v. *K Mart Corp.* **Same, filed** Aug. 5, 1980, D.C., N.D. Ill. (Chicago), Doc. 80C4124, *Magnavox Co. and Sanders Associates, Inc.* v. *Mattel, Inc., et al.*

3,674,898. (See 3,557,268.)

3,676,392. (See 3,409,579.)

3,729,680, Ramsey H. McDonald, RADIO PAGER WITH VOICE MESSAGE AND SUBSTITUTE PAGING NUMBERS. **filed** Feb. 20, 1981, D.C., S.D. Fla. (Fort Lauderdale), Doc. 81-6096-Civ-JAG, *Ramsey H. McDonald* v. *Motorola, Inc.*

3,753,535, Otto Zollinger, Inc., YARN TENSIONING DEVICE AND METHOD; **3,874,613, same,** YARN TENSIONING DEVICE; **3,892,371, same,** YARN TENSIONING DEVICE, **filed** Apr. 13, 1976, D.C.N.J. (Camden), Doc. 76-676, *Otto Zollinger, Inc.* v. *Qualitex, et al.* Order administratively terminating action without prejudice filed Mar. 23, 1979.

3,760,424, David Leinoff, COMPOSITE FUR PELT AND METHOD OF MAKING SAME AND FUR COAT, **filed** Feb. 25, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1107, *David Leinoff* v. *Louis Milona & Sons, Inc.* **Same, filed** Feb. 25, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1108, *David Leinoff* v. *R. H. Macy & Co. Inc.*

3,763,109, E. I. du Pont de Nemours & Co., Inc., SEGMENTED THERMOPLASTIC COPOLYESTERS; **3,766,146, same,** SEGMENTED THERMOPLASTIC COPOLYESTER ELASTOMERS; **3,784,520, same,** SEGMENTED THERMOPLASTIC COPOLYESTERS; **3,801,547, same,** SOLID PHASE POLYCONDENSATION PROCESS; **3,832,314, same,** SEGMENTED COPOLYESTER ADHESIVE AND COATING COMPOSITIONS; **3,835,098, same,** PROCESS FOR IMPROVING THERMOPLASTIC ELASTOMERIC COMPOSITIONS; **3,896,078, same,** STABILIZATION OF POLYMERS CONTAINING POLY (ALKYLENE OXIDE) UNITS; **3,907,926, same,** BLENDS OF THERMOPLASTIC COPOLYETHERESTER WITH POLYBUTYLENE TEREPHTHALATE; **3,917,743, same,** COPOLYETHERESTER BLENDS; **3,932,326, same,** SOFT THERMOPLASTIC SEGMENTED COPOLYESTERS AS PRESSURE SENSITIVE ADHESIVES; **3,941,904, same,** METHOD OF APPLYING ADHESIVE COATINGS USING SEGMENTED COPOLYESTER COMPOSITIONS; **3,959,062, same,** METHOD OF JOINING SURFACES USING SEGMENTED COPOLYESTER ADHESIVE; **3,963,802, same,** BLEND OF ETHYLENE COPOLYMER ELASTOMER AND A COPOLYETHERESTER ELASTOMER; **4,013,624, same,** BRANCHED THERMOPLASTIC COPOLYESTERS, **filed** July 30, 1980, D.C. Del. (Wilmington), Doc. 80-359, *Akzo Plastics B.V.* v. *E. I. Du Pont de Nemours & Co., Inc.*

3,766,146. (See 3,763,109.)

3,784,520. (See 3,763,109.)

3,801,547. (See 3,763,109.)

3,809,397, Bryan J. Grunewald, APPARATUS FOR DEVELOPING QUICKNESS IN SWINGING OF A BASEBALL, **filed** Nov. 15, 1979, D.C., S.D. Calif. (San Diego), Doc. 79-1846, *Bryan J. Grunewald* v. *Power Swing Partners, et al.* Dismissed without prejudice for want of prosecution. Filed Feb. 18, 1981.

3,810,515, Ben Ingro, WALL CLIMBING DEVICES, **filed** Feb. 3, 1981, D.C., N.D. Ill. (Chicago), Doc. 80 C 5890, *Ben Ingro* v. *Tyco Industries.*

3,815,586, Orthokinetics Inc., ORTHOPEDIC CHAIR WITH SCOLIOSIS PADS; **3,891,229, same,** TRAVEL CHAIR, **filed** Jan. 26, 1981, D.C., N.D. Ohio (Cleveland), Doc. 81-130, *Orthokinetics Inc.* v. *Safety Travel Chairs Inc., et al.*

3,826,398, William C. Rivers, Jr., TRANSPORT CONTAINER **filed** June 24, 1980, D.C., M.D. Fla. (Jacksonville), Doc. 80-588-CIV-J-B, *Bill Rivers Corp.* v. *Howard Johnson Co., et al.* Complaint hereby dismissed with prejudice with each party to bear its own costs filed Feb. 10, 1981.

3,832,314. (See 3,763,109.)

3,835,098. (See 3,763,109.)

3,835,857, Mentor Corp., MALE URINAL DEVICE; **3,863,638, same,** SHEATH ARRANGEMENT FOR MALE URINAL DEVICE; **4,187,851, same,** SHEATH ARRANGEMENT FOR MALE URINAL DEVICE AND METHOD OF FORMING THE SAME, **filed** Jan. 22, 1981, D.C., N.D. Ga. (Atlanta), Doc. 81-144A, *Mentor Corp.* v. *Medical Marketing Group, Inc.*

3,843,601, SWS Silicones Corp., HYDRAULIC ELASTOMER, **filed** Jan. 21, 1981, D.C., E.D. Mich. (Detroit), Doc. 81-70228, *SWS Silicones Corp.* v. *General Electric Co.*

3,854,664, The Toro Co., SPRINKLER SYSTEMS, **filed** Feb. 5, 1981, D.C., C.D. Ill. (Peoria), Doc. 81-1019, *The Toro Co.* v. *L. R. Nelson Corp.*

3,863,638. (See 3,835,857.)

3,874,613. (See 3,753,535.)

3,881,207, Paul Jones Jr. and Ferris E. Jones, LOADING DOCK, **filed** Apr. 7, 1978, D.C., E.D. Mich. (Flint), Doc. 78-40044, *Lakeside Fabrication & Engineering Co. and Paul Jones Jr.* v. *Spins, Inc.* Order of Dismissal filed Jan. 21, 1981.

3,891,229. (See 3,815,586.)

3,892,371. (See 3,753,535.)

3,896,078. (See 3,763,109.)

3,907,926. (See 3,763,109.)

3,917,743. (See 3,763,109.)

3,932,326. (See 3,763,109.)

3,939,545, Assembly Machines, Inc., ASSEMBLY MACHINE ACTUATOR, **filed** Apr. 9, 1979, D.C., W.D. Pa. (Erie), Doc. 79-48 Erie, *Assembly Machines, Inc.* v. *Swanson-Erie Corp.* Stipulation of Dismissal with prejudice filed Feb. 11, 1981.

3,941,904. (See 3,763,109.)

3,959,062. (See 3,763,109.)

3,963,802. (See 3,763,109.)

3,990,176, Felix Puschkarski, LIFE-LIKE TOY ANIMAL, **filed** Jan. 26, 1981. D.C., C.D. Calif. (Los Angeles), Doc. 81-0390 LEW, *Imperial Toy Corp.* v. *Illfelder Toy Co., Inc.*

3,998,045, Status Time Corp., TALKING SOLID STATE TIMEPIECE, **filed** Feb. 23, 1981, D.C., S.D.N.Y., Doc. 81-Civ-1051 CLB, *Status Time Corp.* v. *Sharp Electronics Corp.*

4,013,624. (See 3,763,109.)

4,016,616, Lawrence S. Scott, DIVER FLOTATION APPARATUS, **filed** Jan. 23, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-0369, *Lawrence S. Scott* v. *Inflatable Systems, Inc.*

4,036,201, R. E. Phelon Co., Inc., SINGLE CORE CONDENSER DISCHARGE IGNITION SYSTEM, **filed** Jan. 16, 1979, D.C., N.D. Ind. (South Bend), Doc. S79-0009, *R. E. Phelon Co., Inc.* v. *Wabash, Inc.*

4,054,466, Oxy Metal Industries Corp., TANNIN TREATMENT OF ALUMINUM, **filed** Feb. 6, 1981, D.C., N.D. Ill. (Chicago), Doc. 81-C-624, *Hooker Chemicals & Plastics Corp.* v. *Coral Chemical Co.*

4,109,224, American Antenna Corp., PRECISION INJECTION-MOLDED COIL FORM AND METHOD AND APPARATUS FOR MANUFACTURE, **filed**

June 1, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 2246, *American Antenna Corp.* v. *AVA Inc., et al.* Order of Dismissal filed Feb. 2, 1981.

4,127,232, Medfare, Inc., METHOD AND APPARATUS FOR TALLYING FOOD ITEMS SELECTED ON MENUS, **filed** Jan. 23, 1981, D.C., N.D. Ga. (Atlanta), Doc. C81-156A, *Medfare, Inc.* v. *Morris Graphics Ltd.*

4,139,955, Earl M. Reiback, DISPLAY DEVICE, **filed** Feb. 13, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0875, *Earl M. Reiback* v. *Mechanical Mirror Works, Inc.*

4,146,293, Maxwell Alarm Screen Manufacturing Co., ENTRY DETECTION SCREEN, **filed** Jan. 26, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 0400 CBM, *Maxwell Alarm Screen Manufacturing Co. of Calif. Inc.* v. *Protective Service Corp.*

4,187,851. (See 3,835,857.)

4,208,679, Digital Equipment Corp., TRANSDUCER POSITIONING SYSTEM FOR ROTATING DISK DRIVE UNITS, **filed** Feb. 5, 1981, D.C.N.H. (Concord), Doc. 81-72, *Digital Equipment Corp.* v. *Nashua Corp.*

4,226,910, Minnesota Mining and Manufacturing Co., ENERGY CONTROL SHEET HAVING INSULATIVE PROPERTIES, **filed** Feb. 25, 1981, D.C. Mass. (Boston), Doc. 81-540MC, *Van Leer Plastics, V.A., et al.* v. *Minnesota Mining and Manufacturing Co.*

Re. 28,222, Keith H. Wycoff, COMMUNICATION RECEIVER INCORPORATING TONE OPERATED PULSER CIRCUIT AND ELECTRONIC SWITCH, **filed** Sept. 20, 1979, D.C., N.D. Ill. (Chicago), Doc. 79C3918, *Keith H. Wycoff, et al.* v. *Multitone Electric Co., Ltd., et al.* Dismissed with prejudice and without costs on Jan. 26, 1981.

Re. 28,507. (See 3,659,284.)

D. 220,559, American Dairy Queen Corp., SIGN; **D. 221,739, same,** FOOD SERVICE BUILDING; Reg. No. **763,209** (DAIRY QUEEN AND DESIGN), American Dairy Queen Corp.; Reg. No. **804,002** (DAIRY QUEEN AND DESIGN), American Dairy Queen Corp.; Reg. No. **806,494** (BRAZIER AND DESIGN), American Dairy Queen Corp.; Reg. No. **811,416** (DAIRY QUEEN AND DESIGN), American Dairy Queen Corp.; Reg. No. **932,993** (DESIGN OF A BUILDING), American Dairy Queen Corp.; Reg. No. **968,276** (BROWNIE DELIGHT), American Dairy Queen Corp.; Reg. No. **976,938** (DQ AND DESIGN), American Dairy Queen Corp.; Reg. No. **983,054** (SUNDAE SUPREME), American Dairy Queen Corp., **filed** May 23, 1980, D.C., S.D. Ohio (Dayton), Doc. C-3-80-206, *American Dairy Queen Corp.* v. *William Allen, et al.*

D. 221,739. (See D. 220,559.)

D. 235,554, Ronald J. Portugal, ELECTRICAL SOCKET; **D. 241,252, same,** ELECTRICAL SOCKET BOARD, **filed** Feb. 18, 1981. D.C.N.J. (Trenton), Doc. 81-494, *Global Specialties Corp.* v. *Hadar Testing and Teaching Aids, Ltd.*

D. 241,252. (See D. 235,554.)

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Birmingham Public Library	(205) 254-2555
California	Los Angeles Public Library	(213) 626-7555 Ext. 274
	Sacramento: California State Library	(916) 323-4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242-7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF Mar. 21, 1981

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	2-07-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-11-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	10-22-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	2-01-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-01-80
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—VACANT ..... Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	7-10-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—VACANT ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	9-05-79
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—VACANT ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-14-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASUKING, GROUP 240—A. L. SMITH, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	7-09-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGN, GROUP 290—C. D. QUARFORTH, Director ..... Industrial Arts; Household, Personal and Fine Arts.	2-12-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	10-29-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	11-01-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	9-18-77
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	7-27-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during Feb. 1981, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,122,749 to 3,127,613, inclusive

Plant Patents ..... Numbers 2,368 to 2,388, inclusive

REISSUES

MAY 19, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,613

SHEARING TOOL FOR SYNTHETIC RESIN TUBES

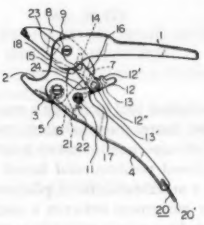
Masahiko Nakamura, Matsuzaka, and Hidehiko Itou, Hisai, both of Japan, assignors to Matsuzaka Iron Works, Inc., Tsu, Japan

Original No. 4,084,317, dated Apr. 18, 1978, Ser. No. 793,320, May 3, 1977. Application for reissue Apr. 6, 1979, Ser. No. 27,663

Claims priority, application Japan, Dec. 11, 1976, 51-166532[U]

Int. Cl.³ B23D *21/06*

U.S. Cl. 30—94 **26 Claims**



20. A shearing tool for cutting elongated stock and the like comprising:

first and second handles;

said first handle having a J-shaped jaw fixed to and projecting from the forward portion thereof and the second handle being pivotally connected to and projecting rearwardly from the bottom of the stem portion of the J;

an elongated cutting blade pivotally supported at the mid-length thereof near the top of said jaw stem portion;

a rock lever pivoted at one end to said second handle at a point spaced from the lower end of said jaw stem portion and extending crosswise of the adjacent end of said blade and having the free end thereof spring-biased toward engagement with said blade end; and

the free end of said rock lever and the adjacent and of said cutting blade being inter-engageable by a pawl and a series of ratchet teeth, said pawl and said teeth being relatively movable and sequentially interengageable at substantially the same distance from said blade pivot and cooperable with one another to provide the same mechanical advantage as said first and second handles are operated through successive opening and closing cycles.

Re. 30,614

SIMULTANEOUS MULTIPLE TWISTING APPARATUS

Sakujiro Matsumura; Tadashi Yamamura, both of 3, Shinmeiji, Kamiyada-cho, Nishio-shi, Aichi-ken; Akira Ogura, 3-49, Shinsakae-machi, Toyokawa-shi, Aichi-ken, and Masataka Hayashi, 3, Shinmeiji, Kamiyada-cho, Nishio-shi, Aichi-ken, all of Japan

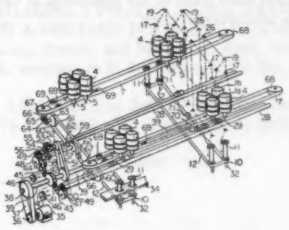
Original No. 3,918,245, dated Nov. 11, 1975, Ser. No. 505,000, Sep. 11, 1974. Continuation-in-part of Ser. No. 362,107, May 21, 1973, Pat. No. 3,846,965. Application for reissue Apr. 24, 1979, Ser. No. 33,018

Claims priority, application Japan, May 26, 1972, 47-51680

Int. Cl.² D01H *1/10, 1/28, 7/86*

U.S. Cl. 57—58.54 **45 Claims**

1. A multiple twisting apparatus having at least one twisting unit, comprising a first twisting device provided with at least two two-for-one twisting assemblies, each of said two-for-one twisting assemblies being provided with a first tension control means disposed therein, means for doubling first-twisted yarns withdrawn from said two-for-one twisting assemblies, a second twisting device disposed below said first twisting device for imparting a second twist to a doubled yarn carried from said means for doubling, means for positively feeding said doubled



yarn to said second twisting device, a plurality of yarn guides forming a yarn passage behind said first twisting device and forming a yarn passage to said feeding means, and means for driving said first twisting device, said second twisting device and said feeding means.

Re. 30,615

PNEUMATIC TIRE WITH REINFORCING BELT THAT MINIMIZES BELT END GYROSCOPIC EFFECT

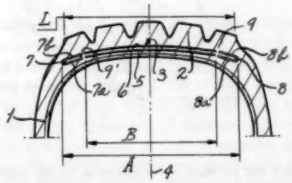
Henri J. Mirtain, Allee de Marteville, Compiegne, France

Original No. 4,034,791, dated Jul. 12, 1977, Ser. No. 694,276, Jun. 9, 1976. Application for reissue Nov. 24, 1978, Ser. No. 963,558

Claims priority, application France, Jun. 30, 1975, 75 20502

Int. Cl.³ B60C *9/18, 9/24*

U.S. Cl. 152—361 FP **34 Claims**



1. A pneumatic tire comprising an annular carcass having a radially outerlying crown portion, a tread constituting an annular cover surrounding the crown portion of said carcass, and an annular reinforcement belt interpositioned between the crown portion of said carcass and said tread, said reinforcement belt comprising, in cross-section, a pair of opposite, laterally disposed, crosswise spaced, first and second plies of a first cord material, each of said first and second plies being folded to form two respective flap portions having ends directed toward an equatorial plane of the tire and respective folded margins directed away from said equatorial plane, one of the flaps of each said first and second folded ply confronting at least a portion of the other said respective flap, a first ply of second cord material having opposite terminal ends being disposed between homologous ends of one of the pairs of corresponding opposite, laterally disposed flap portions such that said one pair of opposite, laterally disposed flap portions

extends laterally beyond corresponding terminal ends of said first ply of second cord material in substantial alignment with said corresponding opposite terminal ends, and a second ply of said second cord material having opposite terminal ends, said second ply of second cord material being disposed adjacent said first ply of second cord material such that said second ply of second cord material does not extend laterally beyond the folded margins or between the confronting flap portions of the first and second folded plies, whereby said first and second plies of the first cord material are positioned at the marginal ends of said reinforcement belt and said first and second plies of the second cord material are positioned at the median portion of the reinforcement belt.

Re. 30,616

BOX FOR AMPOULES HAVING A PACKAGING INSERT THAT PROVIDES A CLOSURE ARRANGEMENT AND REINFORCEMENT

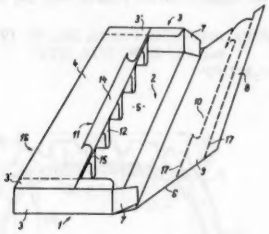
Otto Hofer, Schaan, Liechtenstein, assignor to Interondo AG, Buchs, Switzerland

Original No. 4,186,835, dated Feb. 5, 1980, Ser. Nq. 950,179, Oct. 10, 1978. Application for reissue May 13, 1980, Ser. No. 149,531

Claims priority, application Switzerland, May 26, 1978, 5771/78

Int. Cl.[3] **B65D** *5/54, 83/04*

U.S. Cl. 206—443 **5 Claims**



1. A box for packaging elongate articles, such as ampoules, comprising a box body formed by folding and gluing operations and including a rear wall having two side edges, a bottom edge and a top edge, two side walls respectively extending forward from said side edges of said rear wall and having parallel front edges, a front wall extending between said front edges of said side walls, said front wall being of less area than said rear wall, thereby forming with said side walls an open area, a cover extending from said top edge of said rear wall and formed to cover said open area, means for detachably securing said cover to said front wall, and an insert for packaging the elongated articles and including firstly a support formed and secured to lie against the inside surface of said front wall for the purpose of strengthening said front wall and secondly a corrugated cardboard strip adhered to said support for receiving the elongated articles respectively in corrugations thereof, said front wall and said support being formed to provide a pocket open toward the top of the box, said means for detachably securing said cover to said front wall comprising a tongue portion formed on said cover for insertion into said pocket.

Re. 30,617

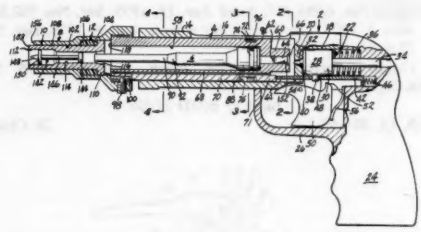
POWER ACTUATED TOOL

David F. Butler, Hamden, and Elmer R. Hodil, New Haven, both of Conn., assignors to Olin Mathieson Chemical Corporation, New Haven, Conn.

Original No. 3,341,101, dated Sep. 12, 1967, Ser. No. 484,592, Sep. 2, 1965. Application for reissue Aug. 10, 1979, Ser. No. 65,682

Int. Cl.[3] **B25C** *1/14*

U.S. Cl. 227—8 **10 Claims**



1. A power-actuated tool including a receiver having a front and rear portion, barrel means slidably mounted within said front portion for movement between a breech open position and a breech closed position, said barrel means including a breech end and a muzzle end, firing pin means mounted in said rear portion for movement between a cocked position and a fired position, cocking means operably connected to said firing pin means to move said firing pin means from its fired position to its cocked position, sleeve means attached to the muzzle end of said barrel means, guide means mounted within said sleeve means for relative axial movement therewith, and sensing means mounted in said barrel means for relative movement therewith, said sensing means being in engagement with said cocking means and with said guide means when said barrel means is in its breech closed position with said guide means extending from the muzzle end of said sleeve means, whereby said guide means must be moved toward said rear portion of said [housing] *receiver* with respect to said sleeve means to move said firing pin means to its cocked position.

Re. 30,618

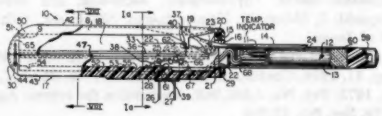
COLLAPSIBLE PORTABLE ELECTRIC HAIR CURLING IRON

Kenneth A. Van Dyck; James B. Wyatt, both of Westport; Charles F. Stephenson, Rowayton, and Scott W. Miller, Stratford, all of Conn., assignors to The Gillette Company, Boston, Mass.

Original No. 4,101,757, dated Jul. 18, 1978, Ser. No. 703,581, Jul. 8, 1976. Application for reissue Mar. 5, 1979, Ser. No. 17,338

Int. Cl.[3] **A45D** *1/04;* **H05B** *3/06;* **H01R** *11/02*

U.S. Cl. 219—225 **26 Claims**



1. A curling iron comprising:

a hollow handle having an open end;

heat conducting means arranged in said handle for telescopic movement therein between a first position projecting from said *open end of said* handle and a second position substantially enclosed within said handle;

an electric heat generating element associated with said heat

conducting means for heating said heat conducting means; and

electrical connector plug means *in said handle, said plug means being* electrically connected to said heat generating element and adapted to connect said heat generating element to an external source of power, said plug means being coupled to said heat conducting means for movement therewith and having bearing means projecting from said plug means for cooperating with means on said handle [for] , *said bearing means* moving said plug means between a first plug position projecting from said handle for [conducting electrical energy to said heat generating element] *connection to an external power source* when said heat conducting means is in said first position and a second plug position substantially entirely within said handle when said heat conducting means is in said second position in response to movement of said heat conducting means between said first and second positions.

Re. 30,619

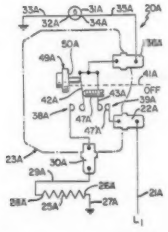
CONTROL SYSTEM AND METHOD AND CONTROL DEVICE THEREFOR

Cloyd E. Decker, Indiana, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Original No. 4,110,601, dated Aug. 29, 1978, Ser. No. 795,403, May 9, 1977. Continuation of Ser. No. 550,456, Feb. 18, 1975, abandoned. Application for reissue Sep. 28, 1979, Ser. No. 80,110

Int. Cl.[3] **H05B** *1/02*

U.S. Cl. 219—506 **17 Claims**



1. A control system comprising a source of energy means, heater means, indicator means, and thermostatically operated control means having selector means for setting said control means in a heater means non-temperature producing "off" setting or in a heater means temperature producing "on" setting, said control means having a single temperature responsive device operatively interconnected to said means to interconnect said heater means to said energy means when the output effect of said heater means is below a predetermined "on" setting of said control means and to disconnect said heater means from said energy means when the output effect of said heater means is above said predetermined "on" setting of said control means, said single temperature responsive device of said control means operating said indicating means to indicate that the output effect of said heater means is above a certain value *only* when said control means is in said "off" setting thereof.

Re. 30,620

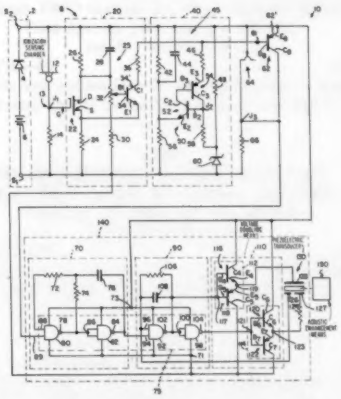
HIGH OUTPUT SMOKE AND HEAT DETECTOR ALARM SYSTEM UTILIZING A PIEZOELECTRIC TRANSDUCER AND A VOLTAGE DOUBLING MEANS

Louis P. Sweany, Carmel, and Michael T. Burk, Indianapolis, both of Ind., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Original No. 4,096,473, dated Jun. 20, 1978, Ser. No. 749,024, Dec. 9, 1976. Application for reissue Jul. 3, 1978, Ser. No. 921,483

Int. Cl.[3] **G08B** *17/10*

U.S. Cl. 340—629 **14 Claims**



7. A high output smoke [and heat] detector alarm system comprising, in combination, a smoke [and heat] detector which includes a low voltage power supply source, [an ambient temperature detecting means,] and at least one ionization sensing chamber; and a high output audible alarm means responsive to said smoke [and heat] detector *and* which includes a piezoelectric transducer and a voltage [double] *doubling* means whereby a voltage is supplied to said piezoelectric transducer which is double said power supply source voltage.

PLANT PATENTS

GRANTED MAY 19, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,717

CLIMBING MINIATURE ROSE PLANT

Ralph S. Moore, 2519 E. Noble Ave., Visalia, Calif. 93277

Filed Jan. 14, 1980, Ser. No. 111,842
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—6 **1 Claim**

1. A new and distinct variety of climbing miniature rose plant of hardy, spreading, much branched habit (rambler type), substantially as illustrated and described, characterized by flowers which are of a general deep red color, the buds and flowers resembling Orange Triumph (polyantha — not patented) in general shape but of smaller size, with an abundance of small glossy foliage; and further characterized by (A) ease of propagation by cuttings or by budding; the suppleness of the canes which leads this variety to use as a ground cover or (by budding) as a weeping standard (tree), and (B) the abundance of flowers borne, usually in clusters.

4,718

EVERGREEN AZALEA

Simon P. Meivogel, Perry, Ohio, assignor to The Cottage Gardens, Inc., Perry, Ohio

Filed Nov. 21, 1979, Ser. No. 96,472
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—57 **1 Claim**

1. The new and distinct variety of variegated evergreen azalea substantially as herein shown and described, characterized particularly by its unique variegated foliage, green leaves with white edges, which is different from any other known evergreen azalea.

4,719

IMPATIENS PLANT NAMED MOHAVE

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Apr. 28, 1980, Ser. No. 144,161
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name Mohave.

4,720

IMPATIENS PLANT NAMED PENOBSCOT

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Apr. 28, 1980, Ser. No. 144,162
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of impatients plant as described and illustrated, known by the cultivar name Penobscot.

4,721

IMPATIENS PLANT NAMED DELAWARE

John J. Ryan, 39877 Sundale Dr., Fremont, Calif. 94538

Filed Apr. 28, 1980, Ser. No. 144,163
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct form of Impatiens plant as described and illustrated, known by the cultivar name Delaware.

4,722

CHRYSANTHEMUM PLANT

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Jan. 8, 1979, Ser. No. 2,035
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—82 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant known by the cultivar name Viva, as illustrated and described, and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; anemone capitulum type; red-bronze ray floret color, with minimal color oxidation; diameter across face of capitulum ranging from 45 to 60 mm. at maturity; uniform eight week flowering response; tall plant height, and upright branching pattern.

PATENTS

GRANTED MAY 19, 1981

ERRATA

For CLASS	See PATENT NO.
434–111	4,267,646
434–301	4,267,647
052–657	4,267,652
493–203	4,267,768
157–017	4,267,867
411–098	4,267,870
250–226	4,267,961
249–165	4,267,998
369–220	4,268,039
525–193	4,268,433
564–305	4,268,458
528–502	4,268,470
008–685	4,268,668
369–007	4,268,724
369–044	4,268,745

PATENTS

GRANTED MAY 19, 1981

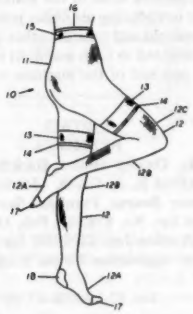
ERRATA

PATENTS

GRANTED MAY 19, 1981

GENERAL AND MECHANICAL

4,267,607
BODY GARMENT
Al Tino, 15 W. 38th St., New York, N.Y. 10018
Filed Jan. 10, 1980, Ser. No. 111,098
Int. Cl.[3] A41B *9/04*
U.S. Cl. 2—409 **2 Claims**



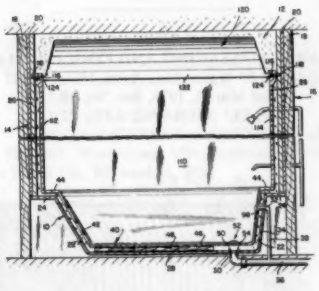
1. A panty hose construction for facilitating the stretching and shaping of the panty hose so as to snuggly conform the panty hose to the shape of the wearer's body with a minimum of risk in snagging or running the panty hose when putting on said hose and for imparting a fashionable look to said hose when worn comprising a pants portion and a pair of connected leg portions integrally connected to said pants portion so as to define a smooth unitary and integrally formed panty hose, each of said leg portions including a foot section having a connected toe and heel portion and a leg section connected to said foot section; said leg section extending beyond the knee and to a substantially mid-portion of the thigh; a wide reinforcing thigh band of single ply defining the upper end of the leg section and which is arranged to circumscribe the said mid-thigh portion of the thigh; said reinforcing thigh band being integrally formed of a yarn having a denier greater than the denier of the yarn forming said leg section, said reinforcing wide thigh band providing an intermediate reinforced area for the wearer to grasp said thigh band without grasping said adjacent leg and pants portion for stretching and shaping the respective leg portion to the wearer's legs in the fitting of said hose to the wearer's body with a minimum of risk in snagging or running said hose, and said pants portion extending from the top of said reinforcing thigh band disposed at substantially the mid portion of the wearer's thigh to the waist of the wearer, and a reinforced waist band circumscribing the upper end of said pants portion.

4,267,608
PROSTHETIC JOINT
F. William Bora, Jr., 404 Gulph Rd., Narberth, Pa. 19072
Filed Oct. 4, 1978, Ser. No. 948,387
Int. Cl.[3] A61F *1/03*
U.S. Cl. 3—1.91 **12 Claims**

1. A prosthetic joint for a finger, wrist or elbow comprising:
first and second implant members opposed to each other,
each implant member having a shank for implantation in a bone of a finger, wrist or elbow,
each implant member having opposed substantially cylindrical arcuate portions,
a first flexible band having one end secured to the first implant member and the other end secured to the second implant member with the band being wound in one direction on the arcuate portion of the first implant member and in the opposite direction on the arcuate portion of the second implant member, and
a second flexible band having one end secured to the first implant member and the other end secured to the second implant member, the second band being wound on the arcuate portion of the first implant member in the direction opposite to the direction of wind of the first band and being wound on the arcuate portion of the second implant

member in the direction opposite to the direction of wind of the first band,
said band being of resilient material and under tension to urge implant members together and being so tensioned that the extension position is the normal position of the joint,
said bands remaining in contact with said arcuate portions at all times during extension and flexion.

4,267,609
GASKET ASSEMBLY FOR COUPLING DRAINAGE OUTLET OPENINGS IN BATHTUB LINER INSTALLATIONS
Gilbert Altman, Bronx, N.Y., and Gerard Bellasalma, West Caldwell, N.J., assignors to Thermasol Ltd., Leonia, N.J.
Filed Dec. 18, 1978, Ser. No. 970,365
Int. Cl.[2] A47K *3/00*
U.S. Cl. 4—580 **14 Claims**



1. In a bathtub refurbishing installation in which a plastic bathtub liner is installed within the tub cavity of an existing bathtub with at least a portion of bottom wall of the liner spaced above the bottom wall of the bathtub and a outlet opening in the liner overlying a drainage outlet opening of the bathtub,
a gasket assembly for coupling the outlet openings of said liner and bathtub,
said gasket assembly including a hollow cylindrical gasket body sized to be inserted in the space between the bottom walls of said liner and said bathtub,
first sealing means at the upper end of said gasket body for mounting said upper end in sealed communication with the outlet opening of said plastic liner, and
second sealing means at the lower end of said gasket body

for mounting said lower end in sealed communication with the drainage outlet opening of said bathtub,

said gasket body having a side wall made of elastomeric material and being stretchable and compressible.

4,267,610

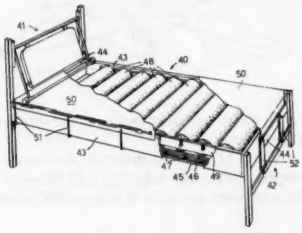
BODY SUPPORT

Richard S. Blakeway, 5 Yarrow Ct., Cleveland, Queensland, Australia (4163); Stanley R. Blakeway, Stafford, and Peter J. Olds, Maryborough, both of Australia, assignors to Richard S. Blakeway, Cleveland, Australia

Filed Jul. 6, 1979, Ser. No. 55,356

Int. Cl.[3] A61H *7/00, 15/00;* **F01B** *0/00*

U.S. Cl. 5—60 **3 Claims**



1. A body support including:

a base frame,

a substantially horizontal bearer member mounted on the base frame for reciprocal movement longitudinally with respect to said base frame,

a series of parallel resiliently deformable rollers arranged transversely on, and supported by, said bearer member,

a flexible top sheet secured on said base frame over and in contact with said rollers, and

means for reciprocating said bearer member to cause said rollers to rock back and forth in unison between said bearer member and said top sheet.

4,267,611

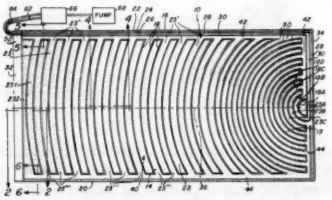
INFLATABLE MASSAGING AND COOLING MATTRESS

Arnold Agulnick, 33 Wales Ave., Avon, Mass. 02322

Filed Mar. 8, 1979, Ser. No. 18,720

Int. Cl.[3] A61H *7/00;* **A47G** *27/08*

U.S. Cl. 5—453 **6 Claims**



1. An inflatable mattress comprising:

a top and a bottom sheet having head and foot ends and opposite sides, said sheets being heat-sealed together to form a plurality of inflatable ribs each extending from one side to the other and transversely of the body of the person lying on the mattress, said ribs being closed at one end and open at the other, alternate ribs having their open ends on one side of the mattress and the remaining ribs having their open ends on the other side of the mattress,

said sheets being made of a thin and flexible material so that the sheets collapse upon one another when the ribs are deflated, said ribs being arcuate in shape with the portion of each rib intermediate the sides lying closer to the head end of the mattress than the ends of the ribs so as to create in each rib a directional component perpendicular to the transverse direction of the mattress and toward the head end,

manifolds formed between the sheets by heat-sealed seams between them, one manifold extending along each side of the mattress,

said manifolds being connected to the open ends of the ribs on their respective sides of the mattress,

and means for introducing air under pressure alternately into first one manifold and then the other manifold and causing the ribs connected to each manifold to be inflated sequentially from one end of the mattress to the other.

4,267,612

BEEHIVES

Arthur E. Watts, Oakley House, Buckthorn Oak, Farnham, Surrey, and Alfred E. A. Green, Morris Lodge Hotel, Frensham Rd., Lower Bourne, Furnham, Surry, both of England

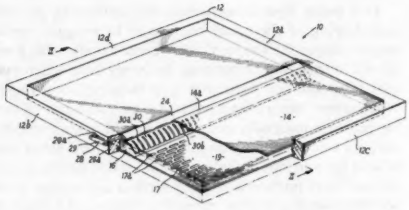
Continuation of Ser. No. 878,463, Feb. 16, 1978, abandoned.

This application Jan. 23, 1980, Ser. No. 114,564

Claims priority, application United Kingdom, Feb. 17, 1977, 6642/77

Int. Cl.[3] A01K *47/06*

U.S. Cl. 6—4 B **24 Claims**



7. A bee escape comprising a shallow box-like structure having opposed first and second side walls,

a first cover member extending between corresponding portions of said first and second walls,

a second cover member extending between corresponding portions of said first and second walls,

the cover members being arranged in spaced relation with portions including an overlapping free edge of the first cover member and an overlapping boundary of the second cover member defining a tunnel between the internal surfaces of the overlapping portions of the cover members and common portions of the internal surfaces of the first and second walls, the tunnel communicating at one end with a first bee access and at the other end with a second bee access and gate means having a first operative position in which bees can move in either direction through the tunnel and a second operative position in which bees can move in only one direction through the tunnel.

4,267,613

BEE KEEPING APPARATUS

Dewey S. Hester, 878 Belanger St., Houma, La. 70360

Filed Aug. 31, 1979, Ser. No. 71,480

Int. Cl.[3] A01K *47/02*

U.S. Cl. 6—10 **9 Claims**

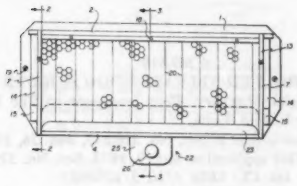
1. A bee keeping frame for forming a brooding area, said frame comprising in combination:

a pair of spaced parallel side rails interconnected by a back rail support which extends beyond terminal portions of said side rails and further interconnected by a split front rail support which terminates at ends of said side rails remote from said back rail support,

said back rail support having a ledge portion facing into said frame,

a wax brooding foundation extending from said ledge portion covering an inner area of said frame and terminating substantially along the length of and between outer faces of said split front rail support;

a guide for securing and orienting said wax brooding foundation to said frame defined by:



an elongate strip of substantially U-shaped configuration having a top guide portion and bottom guide portion interconnected by a curved bent portion between which said wax brooding foundation is interposed and wherein said guide has a handle extending from said bent portion away from the "U".

4,267,614

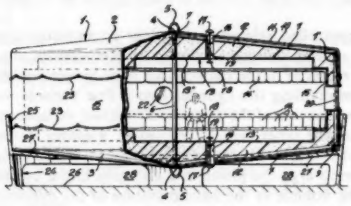
LIFE-SAVING APPARATUS

Axel Anderson, 5333 Sherbrooke St. East, Apt. 1013, B, Montreal Quebec, Canada (H1T 3W2)

Filed Nov. 2, 1979, Ser. No. 90,565

Int. Cl.³ B63C *9/06*

U.S. Cl. 9—4 R **2 Claims**



1. A life-saving apparatus consisting of a buoyant vessel generally in the shape of a hollow closed cylinder and of a rigid construction having a sidewall and two end walls, wherein said cylinder is provided with a hermetically-sealable door in its side wall, also provided with two ventilation apertures located in both end walls of said cylinder, further provided with a first rigidly-secured set of seats adjacent a first end wall, and a second rigidly secured set of seats adjacent said second end wall, said first set of seats being upside up and the second set of seats being upside down when said vessel is in a position such that said first end wall is the floor of said vessel, whereby said second set of seats assumes a lower upside-up position when said vessel is overturned in heavy seas, and said first row of seats assumes an upper, upside-down position, said cylinder being provided with a rigid skeletal structure consisting of a central pole, at least two radially-projecting members in each end wall of said cylinder and rigidly secured to said vertical pole, said radially-projecting members secured at their respective outer ends to a circular peripheral member located within the junction of the respective end walls with said side wall, and further consisting of additional poles, parallel to said central pole, extending within said side wall and interconnecting said circular peripheral members.

4,267,615

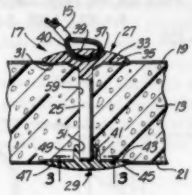
LEASH TO SURF MAT CONNECTOR

Robert B. Nealy, 129 Ladera La., San Clemente, Calif. 92672

Filed May 15, 1978, Ser. No. 906,402

Int. Cl.³ A63C *15/06*

U.S. Cl. 9—310 E **9 Claims**



1. A surfing device comprising:

a panel which is sufficiently buoyant to float in water, said panel having first and second faces;

a connector including a shank member and a head member coupled to one end of the shank member;

said head member having an inner surface which confronts said first face of said panel and an exposed smooth outer surface, said shank member projecting into said panel and extending toward said second face of said panel;

said connector including a coupling member having a passage therein which receives the other end of the shank member and means for attaching the coupling member to the shank member adjacent said other end thereof with said other end of said shank member being received by said passage;

said coupling member having an inner surface which confronts the second face of the panel whereby the head member and the coupling member are separated by said panel and the connector is attached to said panel, said coupling member having an exposed smooth outer surface;

a leash; and

means for attaching the leash to at least one of said members whereby the connector attaches the leash to the panel.

4,267,616

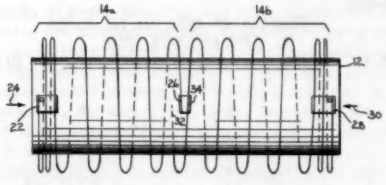
ROTARY SWEEPING BROOM

Frederick B. Hunt, Wauwatosa, Wis., assignor to Milwaukee Dustless Brush Co., Milwaukee, Wis.

Filed Sep. 15, 1978, Ser. No. 942,778

Int. Cl.³ A46B *7/10*

U.S. Cl. 15—182 **58 Claims**



1. A rotary sweeping broom comprising:

a central core extendable longitudinally along the axis of rotation of the broom;

a helically coiled sweeping brush means having a first end attached to said core and having the turns extending along the periphery of said core, the turns and second end of said

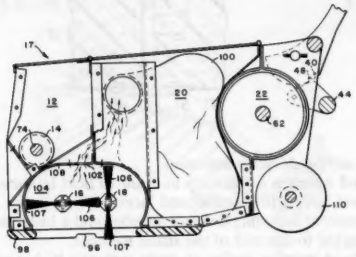
sweeping brush being free to move circumferentially about said core in an unrestrained manner in either direction of circumferential movement.

4,267,617

CARPET SCRUBBER WITH IMPROVED BRUSH

Robert S. Brown, Spartanburg, and Larry S. Satterfield, Moore, both of S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jul. 16, 1979, Ser. No. 57,864
Int. Cl.[3] A47L 5/30
U.S. Cl. 15—320 **1 Claim**



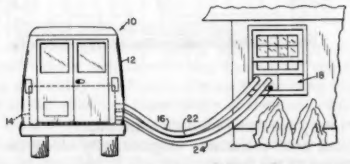
1. A carpet cleaning apparatus comprising: a frame, a housing mounted on said frame, means forming a powder dispensing chamber, a brush chamber and a vacuum chamber in said housing, a powder dispensing roll in said dispensing chamber, a collection bag in said vacuum chamber, brush means in said brush chamber, a single drive means driving said powder dispensing roll and said brush means, and handle means to move said carpet cleaning apparatus over an area to be cleaned, said brush means including at least two brushes, each of said brushes having a plurality of groups of rows of elongated bristles with the bristles in each row forming a substantially straight line and being substantially the same length, each of said groups of rows of bristles having an outer circumference substantially less than an arc with a subtended angle of 20° and with the groups of one brush being out-of-phase with the groups of the other brush, each of said brush means having an axis of rotation substantially parallel to each other which are spaced from one another a distance slightly greater than the radial length of said rows of bristles, said drive means rotating said brushes in a cylindrical path to allow the interdigitation of said brushes to allow intensified cleaning action on the carpet to be cleaned.

4,267,618

MOBILE CLEANING APPARATUS HAVING ADJUSTABLE WINDOW CLOSURE PANEL ASSEMBLY

John F. Cuscovitch, 42 Woodbridge Ave., East Hartford, Conn. 06108

Filed Oct. 19, 1979, Ser. No. 86,536
Int. Cl.[3] A47L 9/00
U.S. Cl. 15—339 **10 Claims**



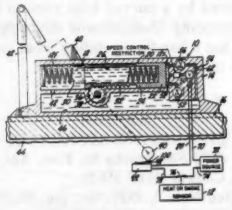
1. In combination with a mobile cleaning apparatus including a vehicle and a cleaning machine carried by the vehicle and having at least one flexible hose attached thereto, a panel assembly having at least one variable dimension for positioning in an opening defined by a window frame and a movable window supported by the frame, said panel assembly having an aperture therein receiving an associated portion of said hose therethrough, said aperture closely complementing said associated portion.

4,267,619

CONTROLLED RELEASE DOOR HOLDER

Charles R. Suska, Roxbury, Conn., assignor to The Stanley Works, New Britain, Conn.

Continuation-in-part of Ser. No. 220,815, Jan. 26, 1972, abandoned. This application Aug. 9, 1972, Ser. No. 279,198
Int. Cl.[2] E05F 3/10, 3/12, 3/22
U.S. Cl. 16—48.5 **5 Claims**



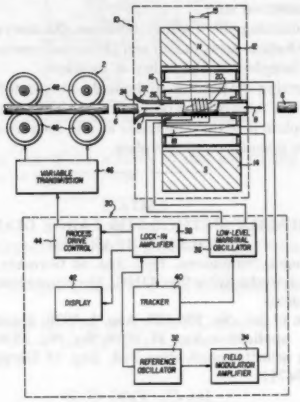
1. A controlled release door holder comprising a housing having a portion defining a cylinder for containment of a fluid, a piston received in the cylinder for axial movement therein, the piston dividing the cylinder into a first variable volume section on one side of the piston and a second variable volume section on the other side of the piston, a spring in the first section of the cylinder compressed between the housing and the piston to urge the piston in a direction in the cylinder to reduce the volume of the second section of the cylinder, and increase the volume of the first section, means responsive to any movement of the door relative to the door opening for moving the piston axially in the cylinder a distance that is a function of the degree of such movement of the door, the movement of the piston being in the direction of the spring to compress it as the door is moved in a direction from closed to open, a first fluid flow path in the housing, the first flow path affording flow of fluid from the first section to the second section and including a check valve for preventing flow of fluid through the first path from the second section to the first section, a second fluid flow path in the housing, the second flow path affording flow of fluid from the second section to the first section and including a pressure relief valve for preventing fluid flow therethrough in the absence of the generation of a set minimum pressure in the second section, a third fluid flow path in the housing, the third fluid flow path affording flow of fluid from the second section to the first section, a controllable valve in the third flow path for selectively preventing or permitting fluid flow along said third path, and a sensing means responsive to the position of the door relative to the door opening to open the controllable valve when the door is in any position between slightly opened and fully closed to enable flow of fluid from the second section to the first section.

4,267,620

METHOD AND APPARATUS FOR CONTROLLING TEXTILE WORKING SYSTEMS EMPLOYING NMR DETECTOR

John D. Allen, Jr., Knoxville, Tenn., assignor to Special Instruments Laboratory, Inc., Knoxville, Tenn.

Filed Aug. 17, 1978, Ser. No. 934,536
Int. Cl.³ G01R *33/08;* D01H *5/32*
U.S. Cl. 19—239 **10 Claims**



2. A method of controlling a textile working system comprising the steps of:

producing a signal related in value to the number of a specific type of atom bonded to fibrous material in a known length of a traveling fibrous body being worked in the system by detecting the amount of energy absorbed by the length of the fibrous body at nuclear magnetic resonance; and

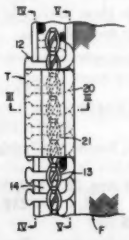
varying an operating parameter of the textile working system responsive to variations in said signal to vary the fibrous mass per unit length.

4,267,621

SLIDE FASTENER

Shunji Akashi, Kurobe, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Oct. 1, 1979, Ser. No. 80,703
Claims priority, application Japan, Oct. 9, 1978, 53-138712[U]
Int. Cl.³ A44B *19/36*
U.S. Cl. 24—205.11 R **4 Claims**



1. A slide fastener comprising:

(a) a pair of carrier tapes;

(b) two rows of continuous interlocking fastener elements made of a synthetic-resinous material and secured by lines of sewn stitches to inner edges of said respective tapes;

(c) a slider including a slider body, a pair of side flanges provided on the opposite side edges thereof and a neck portion provided on the flared front end of said slider body to define with said slider body and said side flanges a Y-shaped channel to slidably receive said interlocking fastener elements for opening and closing thereof; and

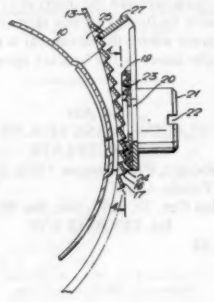
(d) a top stop made of a synthetic-resinous material and comprising a platelike body substantially rectangular in plan molded on and longitudinally of a plurality of uppermost fastener elements of one of said rows of fastener elements so as to extend over the substantially entire width of said one row of fastener elements and an elongated ridge portion provided on and longitudinally of said platelike body so as to extend along its linear region registering with one of said lines of sewn stitches.

4,267,622

HOSE CLIP APPARATUS

Roy L. Burnett-Johnston, 270 Carlton Rd., Gidea Park, Romford, Essex, England

Filed Aug. 6, 1979, Ser. No. 63,723
Int. Cl.³ F16H *33/00*
U.S. Cl. 24—274 WB **10 Claims**



1. Clip apparatus, comprising:

a housing;

a flexible spiral shaped strip having its first end secured to said housng and formed along its outer surface with a plurality of teeth, the end of said strip opposite that secured to said housing extending through said housing; and

a rotatable driving member slidably carried by said housing for longitudinal movement relative to said strip between first and second positions, said driving member having a substantially flat face formed with a second plurality of teeth so shaped that they engage the teeth of said strip when said driving member is disposed in its first position and rotation of said driving member about an axis normal to said flat face causes expansion and contraction of the spiral shape of said strip, with the teeth of said driving member being disengaged from the teeth of said strip when said driving member is moved longitudinally towards the second end of said strip to the second position of said driving member so as to permit the spiral shape of the strip to be adjusted independently of rotation of the driving member.

4,267,623

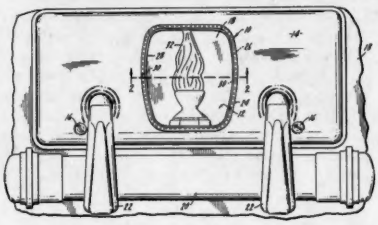
CASKET ORNAMENT STRUCTURE

Francis R. Christian, 411 Ashland Ave., River Forest, Ill. 60305

Continuation of Ser. No. 871,450, Jan. 23, 1978, abandoned. This application Sep. 17, 1979, Ser. No. 76,202

Int. Cl.[3] A61G *17/04*

U.S. Cl. 27—2 6 Claims



1. For use with a casket structure having a casket body closed on the bottom with four upstanding walls, a decorative mounting adapted to be mounted on the walls of such a casket, including a dish-shaped, outwardly convex unitary bracket adapted to be attached to the side walls of such a casket, an opening in the bracket with the edges thereof defining a rim, a decorative insert releasably positioned in the bracket opening and having a peripheral framing circumferential flexible skirt set in and conforming to the bracket opening so as to engage the rim, an ornament astride and mounted in the flexible skirt and visible from the outside, the ornament joining the skirt in a limited number of spaced locations so that the skirt can be easily flexed in areas where the ornament is not joined to it, and a releasable interlock between the insert skirt and the rim of the opening responsive to flexing of the skirt in the plane of the opening in the areas where the ornament is not joined to it to release or hold the insert in the bracket opening.

4,267,624

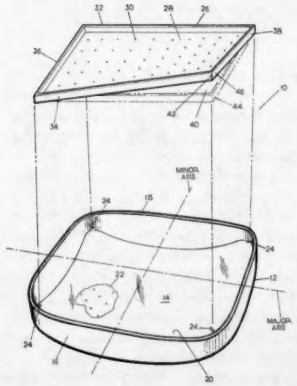
METHOD OF PLACING MASK MOUNTING PINS IN A CRT FACEPLATE

William F. Augsburger, Pickerington, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 22, 1979, Ser. No. 86,862

Int. Cl.[3] H01J *9/18*

U.S. Cl. 29—25.15 11 Claims



1. The method of manufacturing a cathode ray tube including the steps of:

(a) forming a glass faceplate to a concave configuration,

(b) inserting a plurality of shadow mask support studs, in spaced apart relationship, into the concave side of said faceplate,

(c) selecting at least three of said studs to establish a reference plane and indexing a gauging mechanism therewith,

(d) measuring the distance of one of said nonselected studs is out of alignment with said reference plane,

(e) comparing said measured distance to a mathematical model representing the convex surface of a flexible shadow mask, one section of which has been deflected out of plane equivalent to the out of plane distance of said nonselected stud,

(f) calculating the distance between the convex surface of the shadow mask model and the actual concave surface of the faceplate at a plurality of locations,

(g) resetting the position of the said non-selected stud tooling so that the distance between the shadow mask and the faceplate is within tolerance at said locations on the next to be manufactured faceplate.

4,267,625

ASSEMBLY METHOD FOR LARGE DIAMETER ROLLING BEARINGS

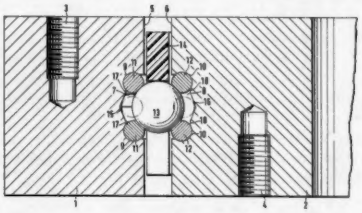
Georg Gugel, Nuremberg, Fed. Rep. of Germany, assignor to Industriewerke Schaeffler OHG, Herzogenaurach, Fed. Rep. of Germany

Division of Ser. No. 930,020, Aug. 1, 1978, abandoned. This application Apr. 27, 1979, Ser. No. 33,964

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 2734712

Int. Cl.[3] F16C *43/04*

U.S. Cl. 29—148.4 A 4 Claims



1. A method for the assembly of large diameter rolling bearings comprised of two concentric supporting rings provided at their outer surfaces facing each other with circumferential grooves having 2 raceway wire seats each arranged in axial distance from each other for receiving raceway wires and provided with a circumferential cavity between the seats with a greater radial depth than the seats comprising inserting raceway wires into the circumferential cavity with their ends abutting with radial play and pressing the raceway wires with axial pressure into their seats where they are retained under preload with their ends abutting.

4,267,626

FIBER BED ELEMENT AND METHOD FOR MAKING THE SAME

Alvah B. Terry, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 25, 1979, Ser. No. 33,366

Int. Cl.[3] B23P *15/16*

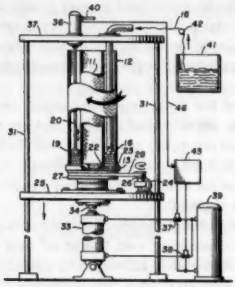
U.S. Cl. 29—163.5 F 10 Claims

1. The method of making a fiber bed element, comprising:

a. feeding a roving of fibers into the annulus formed by a pair of concentric foraminous screens while rotating said screens, and

b. applying a packing force to the roving to compact said

roving to a density of 80 to 320 Kg per cubic meter, said packing force being applied in a direction generally parallel to the axis of the screens so that the roving is compacted in an axial direction.

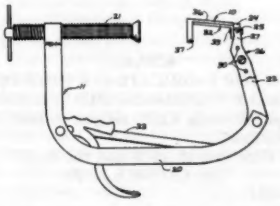


4,267,627

ATTACHMENT FOR VALVE SPRING DEPRESSING TOOL

Ray Douglas, 210 S. Madison, Box 396, Thompson Falls, Mont. 59873

Filed Dec. 17, 1979, Ser. No. 104,440
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—217 **7 Claims**



1. A spring depressing attachment for a valve spring depressing tool that enables selective compression of valve return springs on engine cylinder heads wherein the valve return springs are situated within axial cylinder head recesses, said attachment comprising:

a yoke member;

bracket means on the yoke member for pivotably mounting the yoke member to the valve spring depressing tool about a first axis;

an elongated spring depressing member pivotably mounted to the yoke about a second axis perpendicular to the first axis and having a length dimension greater than the depth of the axial cylinder head recess;

said spring depressing member having an elongated leg extending outwardly from the yoke; and

a ring at an outward end of the leg adapted to extend into an axial recess within the cylinder head and engage a valve return spring therein.

4,267,628

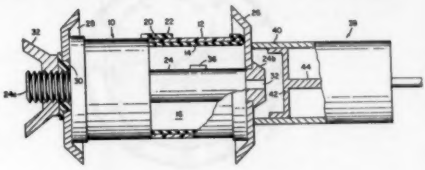
APPARATUS FOR INSTALLING CABLE COVERINGS

Hyman Izraeli, West Caldwell, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Aug. 23, 1979, Ser. No. 69,223
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 **22 Claims**

1. Apparatus for expansion of a sleeve member assembled interiorly of an outer member of hollow self-sustaining configuration, such assembly having opposed first and second open ends and a passage therebetween circumscribed by said sleeve member, said apparatus comprising:

support means for receiving said assembly and for fluid sealing said passage, including first and second end closures and spacer means supporting said first and second end closures for relative movement therebetween for placement of said first and second end closures in respective fluid sealed engagement with said first and second ends of said assembly;



fluid conduit means accessible exteriorly of and extending through said support means to an outlet in juxtaposition with said passage;

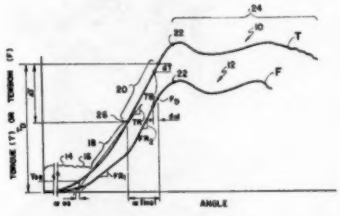
and, unidirectional flow valve means supported by said support means in registry with said conduit means and said passage.

4,267,629

TENSION CONTROL OF FASTENERS

Siavash Eshghy, Pittsburgh, Pa., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 912,151, Jun. 2, 1978, Pat. No. 4,179,786, which is a continuation-in-part of Ser. No. 712,554, Aug. 9, 1976, abandoned, and Ser. No. 766,429, Feb. 7, 1977, Pat. No. 4,106,570. This application Apr. 19, 1979, Ser. No. 31,359
Int. Cl.³ B23P *19/06*
U.S. Cl. 29—407 **6 Claims**



1. A method of tightening a threaded fastener sequentially through regions of relatively free rotation, incipient clamp up, and increasing fastener stress toward a region of plastic deformation, comprising

applying torque to and threadably advancing the fastener;

sensing applied torque and producing an output signal representative thereof; and

filtering the output signal in one region to a greater extent than in a second region of tightening.

4,267,630

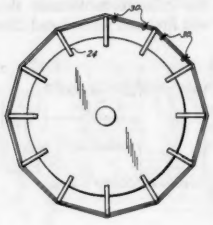
METHOD OF FABRICATION OF CORELESS HOLLOW FILAMENT SEPARATORY MODULE

Robert E. Sebring, Westwood, Mass., assignor to Albany International Corp., Menands, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,861
Int. Cl.³ B23P *17/00*
U.S. Cl. 29—411 **6 Claims**

1. The method of fabricating a coreless filament separatory module comprising the steps of providing a drum with a plural-

ity of radially outwardly projecting vanes extending axially of the drum and spaced so that the tangential distance between tips of the vanes is substantially equal to or greater than the desired length of ultimate filament bundle, winding the filament about the vanes by relative motion between the drum and



the filament being wound to provide a pattern of left and right hand helices with multiple crossover points formed and in which the bundle is thereafter slid axially of said drum and the turns roped together at spaced points thereby trellising the crossover points and segments of the bundle are tied and cut between the vanes to produce the desired length bundle.

4,267,631

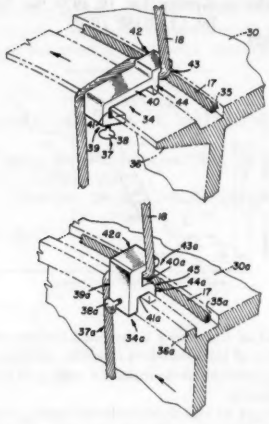
DEVICE AND METHOD FOR REPLACING ROPE CARRIERS ON DRYER ROLLS OF PAPER MAKING MACHINES

Verlin R. Chase, 1246 Simmons, Antioch, Calif. 94509

Filed May 29, 1979, Ser. No. 42,857

Int. Cl.[3] **B23P** *19/00;* **F16H** *7/08;* **B21F** *1/10;* **B25B** *27/14*

U.S. Cl. 29—426.1 **13 Claims**



1. In a paper making machine having a plurality of dryer rolls rotatably mounted therein, a rope installing guide device for replacing a rope on one of the rotatable dryer rolls of the paper making machine, said dryer roll having a annular groove in part defined by an outboard flange disposed adjacent to an end thereof for normally receiving a pair of ropes therein, said guide device comprising

fastening means for releasably clampingly attaching said guide device to an inside and outside of said flange of said dryer roll, and

guide means for receiving and moving at least one of said ropes into the groove formed on said dryer roll, upon dislodgement of said rope from said groove, in response to rotation of said dryer roll, said guide means including guide flange means extending inwardly in at least partial overlying relationship relative to said annular groove to define a circumferential extending recess between said guide flange means and said annular groove for permitting said rope to be positioned in said recess in captured relationship under said guide flange means and against a leading side of said guide means to automatically move said rope into said annular groove upon rotation of said dryer roll.

12. A method for replacing a dislodged, endless rope back onto a rotatable dryer roll of a paper making machine having a plurality of dryer rolls, said dryer roll having an annular groove in part defined by an outboard flange disposed adjacent to an end thereof for normally receiving a pair of ropes therein, comprising the steps of

clampingly attaching a guide device to said dryer roll, to an inside and outside of said flange of said groove, and in captured relationship relative to a convoluted portion of said rope, said attaching step including the step of positioning a guide flange of said guide device in at least partial overlying relationship relative to said groove to define a recess thereat and capturing said rope in said recess to prevent dislodgement of said rope from said recess upon rotation of said dryer roll,

placing said rope over said guide device, and rotation said dryer roll to engage a leading side of said guide device with said rope to automatically reposition said rope in said groove.

4,267,632

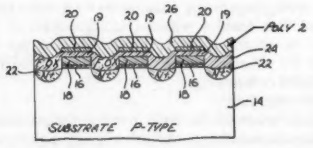
PROCESS FOR FABRICATING A HIGH DENSITY ELECTRICALLY PROGRAMMABLE MEMORY ARRAY

Joseph Shappir, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 19, 1979, Ser. No. 86,273

Int. Cl.[3] **H01L** *21/28*

U.S. Cl. 29—571 **11 Claims**



1. A process for fabricating a metal-oxide-semiconductor, electrically programmable memory array on a substrate, comprising the steps of:

forming a first plurality of parallel, spaced-apart, polysilicon lines insulated from said substrate;

doping elongated regions in said substrate between said first lines, in alignment with said first lines;

forming a second plurality of parallel, spaced apart, polysilicon lines insulated from said first lines and said doped regions, said second lines generally transverse to said first lines and overlying said first lines and doped regions; and

etching said first lines in alignment with said second polysilicon lines so as to form a plurality of floating gates from said first lines, each of said floating gates being disposed between a pair of said doped regions and being insulated from, and disposed below, one of said second lines;

whereby a plurality of electrically programmable floating gate memory devices are formed in a high-density memory array.

4,267,633
METHOD TO MAKE AN INTEGRATED CIRCUIT WITH SEVERABLE CONDUCTIVE STRIP

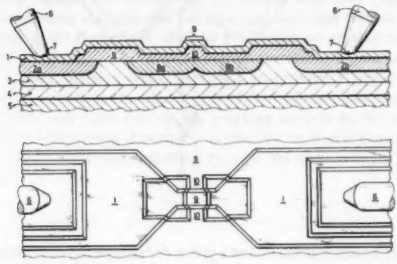
Hartmut Seiler, Reutlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 799,246, May 23, 1977, abandoned. This application Jan. 4, 1979, Ser. No. 814

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1976, 2625089

Int. Cl.[3] H01L *21/28, 23/48*

U.S. Cl. 29—578 2 Claims



1. Method to make an integrated circuit by planar technology having a metallic strip (1) adapted to be severed at a predetermined location (9) on the surface area of the chip by application of electrical current to said strip.

comprising the steps of

providing a silicon substrate chip (3, 4, 5);

forming a zone of lesser heat dissipation capacity than surrounding areas at said predetermined location beneath the metallic strip to provide a burn-out point at said predetermined location including

forming a layer (11) of silicon oxide on said substrate chip of increased thickness with respect to surrounding areas at said predetermined location by utilizing a masking pattern having two windows adjacent said predetermined location (9) while leaving a bridge at said location between said two windows, and diffusing doping material into said chip into the zones of said windows to form diffusion zones (8*a*, 8*b*) in said chip adjacent to and beneath said predetermined location (9) and forming a covering silicon oxide layer (11) at said diffusion zones (8*a*, 8*b*) and over said bridge of silicon oxide whereby the silicon oxide bridge will have a thickened portion (10) with respect to the adjacent areas of the silicon oxide layer (11);

and applying a metallic conductive layer (1) in strip form over the silicon oxide layer located over said diffusion zones (8*a*, 8*b*) and over said thickened portion (10), to provide said zone of lesser heat dissipation capacity at said location (9) than the heat dissipation capacity of the oxide layer (11) in areas surrounding said predetermined location.

4,267,634
METHOD FOR MAKING A CHIP CIRCUIT COMPONENT

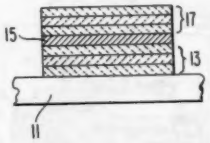
Charles L. Wellard, Oaks, Pa., assignor to American Components Inc., Conshohocken, Pa.

Filed Apr. 5, 1978, Ser. No. 893,288

Int. Cl.[3] H01C *17/06*

U.S. Cl. 29—620 2 Claims

1. A method for making a chip circuit component comprising the steps of: depositing individually a first plurality of thin layers of wet ceramic material in a stacked form on a sheet means and partially drying each of said thin layers of ceramic between each layer deposition thereof; depositing a pattern of electrical resistance material in a wet form onto the uppermost, partially dried, ceramic layer in said stack and partially drying said electrical resistance material; depositing individually a second plurality of thin layers of wet ceramic material in a stacked form onto the partially dried electrical resistance material and partially drying each of said thin layers of ceramic between each layer deposition thereof; further drying the above described stack consisting of the partially dried first plurality of ceramic layers, the partially dried electrical resistance material and the partially dried second plurality of ceramic layers; cutting the further dried, above described, stack into a plurality of chips each of which has a section of said electrical resistance material and abutting two edges thereof surrounded by dried ceramic material, firing said plurality of chips until the ceramic material is hardened into a solid ceramic housing; and securing terminal means to said two edges of the ceramic material and forming said terminal means integral with the resistance material disposed in said solid ceramic housing.



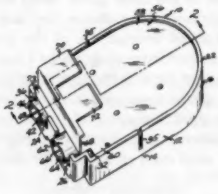
4,267,635
METHOD OF MAKING A SOLID STATE ELECTRICAL SWITCH

Robert F. Blaha, Dedham, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 682,421, May 3, 1976. This application Mar. 8, 1978, Ser. No. 884,779

Int. Cl.[3] H01C *7/00*

U.S. Cl. 29—622 2 Claims



1. In a method employing a solid state electrical switch having an element with first and second contact surfaces separated by a thickness of material having a relatively constant (base) resistivity at temperatures below an anomaly temperature and rapidly increasing resistivity with increasing temperature above said anomaly, the switch being subjected to a given maximum applied voltage across the thickness of the element, comprising the step of selecting the thickness of the element so that the voltage gradient is between approximately 1000 and 1614 volts per centimeter and forming the element so that its base resistivity is approximately 250 ohm cm or higher.

4,267,636
WELDED ARMORED CABLE CUTTING TOOL

Lucien C. Ducret, 8 Apache Pl., Riverside, Conn. 06878

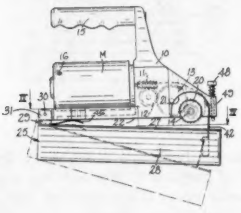
Filed Aug. 29, 1979, Ser. No. 70,893

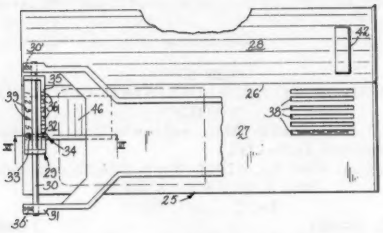
Int. Cl.[3] B21F *13/00;* B26B *27/00*

U.S. Cl. 30—90.3 5 Claims

1. A cutting tool for making an axially extended incision in the surface of an armored cable comprising, a chassis having a substantially flat lower surface, means supporting a circular saw blade on the chassis in a position such that the blade's

periphery projects below the plane of said lower surface, a motor on the chassis and a gear train connecting the motor to the saw blade, in combination with a cable guide constituted by an upper flat panel and a side flat panel, the panels lying in planes which intersect at a wide angle, the upper panel being pivotally secured to the chassis at a point remote from the saw and being provided with a plurality of parallel elongated openings dimensioned and laterally disposed to permit passage therethrough of the periphery of the saw blade, the path of





pivotal movement of the cable guide being toward and away from the lower surface of the chassis, and said openings lying parallel to the line of intersection of the panels, spaced at different distances therefrom, and spaced from the pivot point of the panel a distance equal to the spacing of the saw from said pivot point, and means associated with the pivot point of the panel for holding the cable guide selectively in different laterally adjusted positions corresponding to registry of the saw blade selectively with each elongated opening.

4,267,637

DEVICE FOR SETTING-UP A BASEBALL DIAMOND

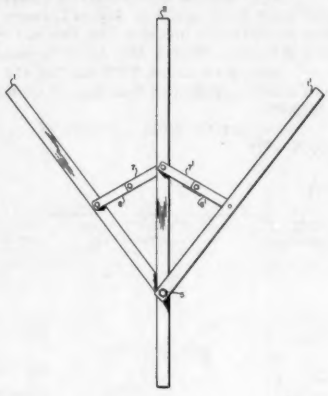
Sheldon A. Paull, 9248 Lavergne, Skokie, Ill. 60076

Continuation-in-part of Ser. No. 847,661, Nov. 1, 1977, abandoned. This application Jun. 25, 1979, Ser. No. 51,676

Int. Cl.³ G01B *5/24;* **G01C** *15/00*

U.S. Cl. 33—1 G **3 Claims**

1. A device for setting-up a baseball diamond comprising: a central prong and two secondary prongs; wherein said central prong and adjacent secondary prongs are pivoted together by a means; wherein said secondary prongs are spaced equidistant on opposite sides of the central prong by means of a separate bar pivoted between each secondary prong and the central prong; wherein said bar consists of two equal sections; wherein one section is pivoted to the secondary prong and the other section is pivoted to the central prong and both sections are pivoted by means of a swivel hinge; wherein said secondary prongs are at a 90° angle to each other and each secondary prong is at a 45° angle to said central prong; and wherein home plate is located at said means, first base is located at a given distance in the direction of the right-hand secondary prong, and third base is located at a given distance in the direction of the left-hand secondary prong, and second base is located at a given distance in the direction of the central prong and the



pitcher's rubber is located at a given distance in the direction of the central prong.

4,267,638

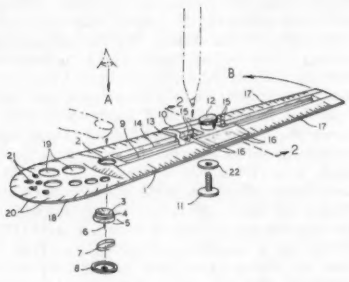
PROTECTED PIVOT ADJUSTABLE SCALED COMPASSES

Richard A. Heinz, 76 Woodhaven Rd., Glastonbury, Conn. 06033

Continuation-in-part of Ser. No. 891,899, Mar. 30, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,828

Int. Cl.³ B43L *9/04*

U.S. Cl. 33—27 C **4 Claims**



1. A protected pivot adjustable scaled compass comprising a molded plastic ruler-like body with an elongated slot along its centerline, said body having scales along the edges thereof, said body having means for a retractable spring loaded protected pivot at one end of said body, said protected pivot made of transparent material in the form of a button and scribed with cross hairs, a molded slide of transparent material that fits within said body slot and overlaps said body scales, said slide having a plurality of holes at the edges aligned with said centerline, hairlines inscribed in said slide, normal to the slide and body centerline which intersect said holes in said slide, said body having on its upper surface grooves parallel to said elongated slot on either side thereof, and said slide having means mating with said grooves for sliding movement therealong, a hole through the center of said slide that permits the insertion of a locking screw with a flat head that engages an elongated recess in the body along said slot in the bottom surface of said body, said screw passes through the slide and engages a thumb nut, further comprising a precise thickness washer having a

hole in its center that fits over the locking screw, said washer has a diameter the same as said locking screw head, said washer capable of being positioned below said body and slide, one side of the washer resting in said recess of the body slot and the other side of the washer resting against the underside of the head of the locking screw with said locking screw passing through holes in said washer and slide and engaging said thumb nut, or alternately said washer capable of being positioned above said body and slide, one side of said washer resting on top of the slide and the other side of the washer resting against the bottom of the thumb nut, with locking screw passing through said holes in said slide and washer and engaging the thumb nut, thereby permitting an adjustment in height of the body and slide above the surface to be marked in the former position when using ink to prevent a smear and permitting an adjustment in height of the body and slide so that the body and slide rest on the marking surface in the latter position when using a pencil or scribe for increased accuracy, the thumb nut being tightened to lock the slide in both positions.

4,267,639

INDICATING INSTRUMENTS

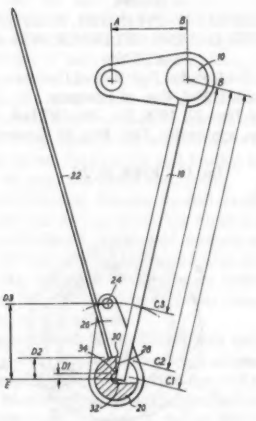
Barry D. Selfe, "Fourays", Capel, England

Filed Jun. 19, 1979, Ser. No. 49,970

Claims priority, application United Kingdom, Jun. 19, 1978, 27223/78

Int. Cl.³ G01B 3/22

U.S. Cl. 33—172 R **8 Claims**



1. An indicating instrument comprising a first member which is mounted for pivotal movement about a first axis; a feeler secured to the first member; a lever arm having one end mounted on the first member and extended away from the first axis; a second member mounted for pivotal movement about a second axis which is parallel to and spaced from the first axis; a first abutment on the second member; a second abutment on the second member further from the second axis than the first abutment; and an indicator device operatively associated with said second member to give an indication corresponding to the angular movement of the second member, said lever arm engaging said second member for, when movement of the feeler rotates the first member, swinging the lever arm, turning the second member first by co-operation with the second abutment to give a certain sensitivity and then by cooperation with the first abutment to give a greater sensitivity.

4,267,640

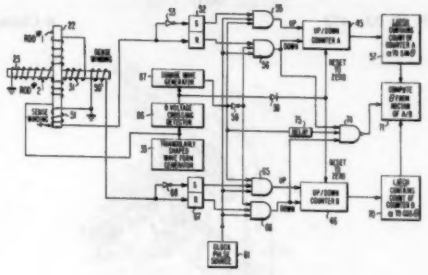
SYSTEM FOR ASCERTAINING MAGNETIC FIELD DIRECTION

Chin T. Wu, North Brunswick, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,743

Int. Cl.³ G01C 17/30

U.S. Cl. 33—361 **10 Claims**



1. Magnetic field direction indicating means comprising:

first and second orthogonally positioned rods, each having a rectangularly shaped BH curve and a switching winding wound therearound;

sensing means for individually sensing a change in polarity of magnetization of said rods;

second means for supplying an alternating current having a triangularly shaped waveform through said switching windings to switch the polarity of magnetization of said rods between their upper and lower levels; and

third means for determining the arc tangent of the ratio of the differences in positive and negative currents required to switch each of said rods between its upper and lower levels.

4,267,641

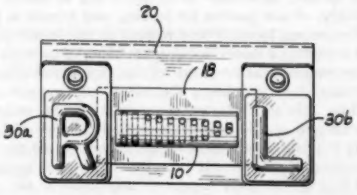
RADIOGRAPHIC FILM INCLINOMETER

Tamotsu Shinozaki, South Burlington, Vt.; Thomas E. Gallant, Norwood, Mass.; Robert S. D. Deane, Burlington, and Daniel Cunningham, Milton, both of Vt., assignors to Picker Corporation, Cleveland, Ohio

Filed Jul. 9, 1979, Ser. No. 55,776

Int. Cl.³ G01C 9/10

U.S. Cl. 33—365 **7 Claims**



1. An inclinometer for use with radiographic film, the inclinometer comprising:

(a) body structure defining an array of columns lying in parallel planes and extending within said body structure said columns being substantially orthogonal to an axis and having different respective radial dispositions with respect to the axis, and

(b) substantially radiopaque inclination indicating material disposed for gravity responsive movement within the

respective columns as a function of orientation of the body structure relative to the horizontal.

4,267,642

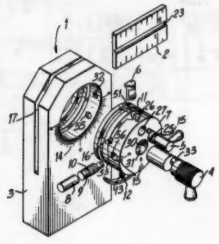
ANGLE GAGE MECHANISM

Richard C. Stapleford, Miami, Fla.

Continuation-in-part of Ser. No. 963,292, Nov. 24, 1978, abandoned. This application Sep. 24, 1979, Ser. No. 77,967

Int. Cl.[3] **B43L** *7/06*

U.S. Cl. 33—473 **6 Claims**



1. An angle gage mechanism to measure angles of surfaces in workpieces comprising, in combination, a frame having a cylindrical hole, said hole including a plurality of radially-extending loking cavities opening into its inner wall and positioned at mutually circumferentially-spaced, predetermined angles, and a longitudinal side slot perpendicular to the axis of said cylindrical hole and extending therethrough, a slidable ruler having a longitudinally-extending groove along one side and capable of being partially inserted in said slot, a cylindrical spindle rotatively received in said spindle hole and having a radially-extending partial slot in register with said side slot of said frame, said cylindrical spindle having a concentric axial cylindrical hole, and first and second radially-extending, diametrically-opposed through holes in communication with said axial hole, a first means for frictionally locking said slidable ruler in place within said radially-extending partial slot of said cylindrical spindle, said first means comprising a radially-extending aperture in said cylindrical spindle, open to the outer periphery thereof and rotatively angularly displaced with respect to said first and second radial holes, a ruler locking pin received in said radially-extending aperture and radially movable ruler for urging said ruler in abuting contact with the bottom surface of said partial slot; a second means including a first locking pin spring biased toward said axial hole and slidable in said first radially-extending hole and actuated at its inner end by eccentric control means carried in said axial hole in said spindle, receivable at its outer end in one at a time, selectively, of said cavities for locking said spindle in place at a predetermined location with respect to said frame; and third means including a second locking pin being of a length greater than the longitudinal dimension of said second radially extending through-hole and being slidable in said second radially-extending hole and actuated at its inner and by said control means carried in said axial hole in said spindle, said second locking pin being abutable at its outer end against the peripheral surface of said spindle hole for frictionally locking said cylindrical spindle with respect to said frame at any angular position with respect thereto.

4,267,643

PROCESS AND APPARATUS FOR CONSERVING ENERGY IN LAUNDRY EQUIPMENT

John C. Haried, 1616 Kenilworth Pl., Aurora, Ill. 60506

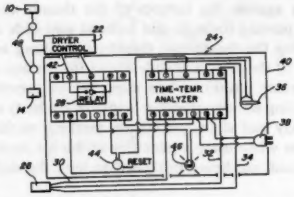
Filed Dec. 4, 1979, Ser. No. 100,253

Int. Cl.[3] **F26B** *21/10*

U.S. Cl. 34—48 **1 Claim**

1. A process for controlling the duration of a cycle of operation of equipment for drying launderable products such as bedding, towels, clothing and the like, having a closed compartment for containing material to be dried, ducts for directing air into and out of said compartment, and controllable means for inducing the flow of air through said duct system, means for heating air prior to entry into said compartment, and means for controlling the last-mentioned means; said process comprising the steps of:

(a) heating said products at a rate sufficient to effect a decreasing level of discharge temperature of air leaving said



duct system at a gradually decreasing rate until said rate of change thereof approaches zero and its temperature begins to increase at a non-linear rate;

(b) sensing a rate of increase of temperature of said air as it increases at said non-linear rate; and

(c) in response to sensing a rate of increase in said temperature which exceeds a predetermined rate of increase, initiating the operation of said controlling means to effect a decrease in the operation of said means for heating of air prior to entry thereof into said compartment.

4,267,644

ROTATABLE HOLLOW CYLINDER, PARTICULARLY USEFUL AS THE DRYING CYLINDER FOR A PAPER MACHINE

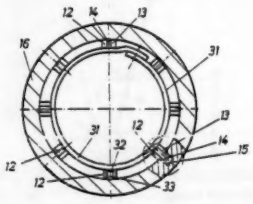
Christian Schiel, Heidenheim, Fed. Rep. of Germany, assignor to J. M. Voith GmbH, Fed. Rep. of Germany

Filed Dec. 27, 1979, Ser. No. 107,545

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1979, 2903784

Int. Cl.[3] **F26B** *25/20*

U.S. Cl. 34—110 **12 Claims**



1. A hollow rotatable cylinder having a cylindrical inner wall;

a set comprising at least two cleat means, each being profiled to project radially inwardly into said cylinder, each extending in the axial direction of said cylinder, each being located at said cylindrical inner wall, and said cleat means of said set being arranged in an axially extending row; said cleat means each being comprised of a cleat; each said cleat having opposite axial ends; said cleats in said set of cleat means being arrayed axially adjacent; each said cleat end having a respective end pin thereon that extends toward said cylindrical inner wall;

boreholes being provided in said cylindrical inner wall generally at the locations toward which said end pins extend said boreholes being so shaped and said end pins of said axially adjacent cleats being so positioned that said adja

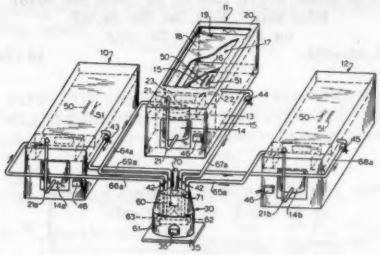
cent end pins of two axially adjacent cleats extend into a common one of said boreholes.

4,267,645

BURNER-FIRED COMBINED WITH WOOD-FIRED APPARATUS FOR DRYING CROPS

Edwin W. Hill, Rte. 2, Box 130, Smithfield, N.C. 27577

Filed Oct. 22, 1979, Ser. No. 87,096
Int. Cl.³ F26B *19/00*
U.S. Cl. 34—213 **6 Claims**



1. A crop drying apparatus, comprising:

(a) barn structure establishing a plurality of heating compartments and for each compartment a confined path for recirculating air therethrough and which path is isolated from similar paths for the other compartments;

(b) a plurality of individually controllable burner-fired heat sources in the nature of gas or oil-fired furnaces having individually controllable associated blower means, one of said burner-fired heat sources and its associated blower means being operatively associated with each of said compartments for blowing and heating the air circulated along the path associated therewith;

(c) a wood-burning furnace located proximate said barn structure and having within the furnace a heat exchange unit establishing a plurality of separate air-heating chambers and a set of pipes associated with each chamber and extending externally of the furnace enabling separate air paths to be established through the furnace and through separate said chambers;

(d) air conduit means associated with each said compartment, said air conduit means being adapted to establish an airflow path which connects at one end to the intake side of the blower means for a selected said compartment and at another end connects to the air discharge side of the selected said compartment enabling air heated in said wood furnace to be continuously circulated through said blower means, through the selected said compartment and through one of said chambers; and

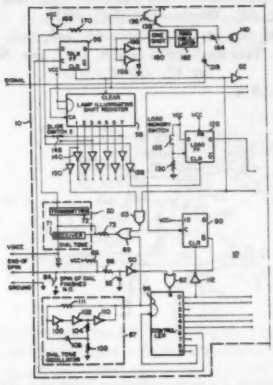
(e) control means associated with said air conduit means and said burner-fired heat sources and blower means enabling each said compartment when in use to have the associated blower means operate continuously and independently of any other compartment blower means operating so as to allow each such compartment to be heated either solely by air passed through one of said furnace chambers, solely by air passed through one of said burner-fired heat sources or by air passed through both one of said chambers and one of said burner-fired furnaces and to have such air however heated to be continuously circulated through such compartment by the blower means associated therewith.

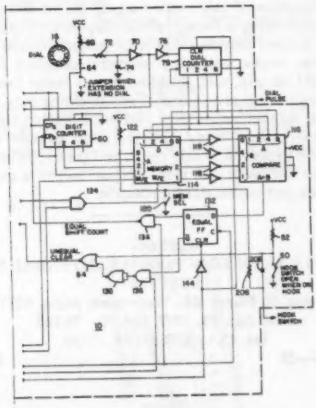
4,267,646

TELEPHONE QUESTION AND ANSWER TRAINING DEVICE

Edward R. Hagwell, 2924 S. Central, Olympia, Wash. 98501

Filed Jan. 18, 1979, Ser. No. 4,350
Int. Cl.³ G09B *7/02*
U.S. Cl. 434—111 **7 Claims**





1. A telephone training device, comprising:

memory means for storing a set of known digits;

a primary telephone having first input means for sequentially selecting a set of digits corresponding in number to the number of digits in said set of known digits;

comparator means for sequentially comparing each of said selected digits to a corresponding known digit;

indicating means receiving the output of said comparator means for sequentially indicating the result of each set of said comparisons;

register means for storing the results of each of said comparisons such that the results of said comparisons are continuously indicated as subsequent digits are selected;

reset means for clearing the results of said comparisons from said register means responsive to a negative comparison between a selected digit and a corresponding known digit;

first audio indicating means actuated as each digit is selected by said input means and positively compared to its corresponding known digit; and

second audio indicating means actuated responsive to the

final digit being selected by said input means and positively compared to its corresponding known digit.

4,267,647

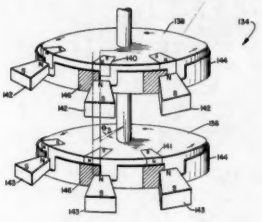
APPARATUS FOR DEMONSTRATING MAGNETIC FORCE

Clarence E. Anderson, Jr., and Rhawn F. Anderson, both of 1802 Morris Rd., SE., Washington, D.C. 20020

Continuation-in-part of Ser. No. 633,469, Nov. 10, 1975, abandoned. This application Sep. 9, 1977, Ser. No. 832,018

Int. Cl.[3] **G09B** *23/18*

U.S. Cl. 35—19 A **5 Claims**



1. An apparatus for demonstrating magnetic force comprising rotor means, rotor magnet means attached to said rotor means for rotation therewith; stationary field magnet means spaced apart from said rotor magnet means and in proximity thereto, like-poles of said rotor magnet means and said field magnet means being in facing relationship to each other, an air gap being formed between said rotor magnet means and said field magnet means; stationary magnetic shielding means located in said air gap, said shielding means being formed of a high magnetic permeance material and shielding only a portion of said field magnet means from said rotor magnet means, said rotor magnet means being first attracted to said shielding means causing rotation of said rotor, and then repelled by said field magnet means as said rotor magnet means is exposed to said field magnet means during rotation.

4,267,648

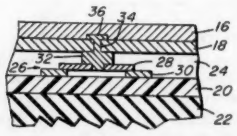
SHOE SOLE WITH LOW PROFILE INTEGRAL SPRING SYSTEM

Vera C. Weisz, 90 Pierce Rd., Watertown, Mass. 02172

Filed Sep. 19, 1979, Ser. No. 76,904

Int. Cl.[3] **A43B** *13/18, 21/30*

U.S. Cl. 36—28 **5 Claims**



1. An article of footwear, comprising

(a) an upper portion for engaging the top of a foot on which said footwear is worn,

(b) a bottom portion connected to said upper portion for engaging the sole of said foot,

(c) said bottom portion including at least a pair of upper and lower strata generally conforming to the outline of said sole and spaced from one another to define a chamber therebetween, and,

(d) spring means of relatively low profile mounted in said chamber and adapted to provide a spring action perpendicular to said sole,

(e) spring means including a plurality of individual spring units arranged in closely spaced side by side relation within said chamber,

(f) each of said spring units comprised of a relatively wide annular support mounted to one of said strata, a hub mounted to the other of said strata in opposing coaxial relation to said support and a relatively narrow disc spring element mounted coaxially to said hub and engaging said support, said support providing axial clearance for said disc when the center thereof is deflected axially by applied force.

4,267,649

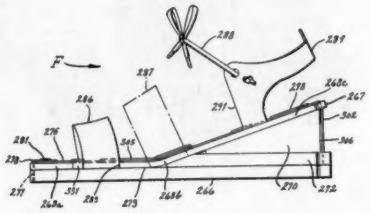
INTERCHANGEABLE SHOE

Gardner M. Smith, 415 N. 12th St., St. Louis, Mo. 63101

Filed May 7, 1979, Ser. No. 36,482

Int. Cl.[3] **A43B** *3/24, 3/12*

U.S. Cl. 36—101 **14 Claims**



1. An article of footwear of selectively reconfigurable wedgie character, said article of footwear comprising an outsole of unitary construction having a toe portion, a central portion, and a heel portion, an upper half-outsole overlying said heel portion and having a forward wedge-defining portion terminating at the central portion of said outsole, said upper half-outsole being secured to said outsole, a heel also of wedge-defining character seated upon said upper half-outsole in removable relationship, a topsole overlying said heel, the forward wedge-defining portion of said upper half-outsole, and the toe portion of said outsole, first hinge-defining means flexibly interengaging said topsole and the forward portion of said upper half-outsole above the central portion of said outsole, a sock liner overlying said topsole, second hinge-defining means flexibly interengaging a toe portion of said sock liner and the toe portion of said outsole, said sock liner extending rearwardly from said second hinge-defining means toward said heel, a securement strap extending upwardly from the heel portion of said outsole at the rear of said heel and forwardly above a heel portion of said topsole, and means for detachably securing said securement strap to said sock liner with said strap and sock liner in tension thereby to maintain said sock liner and said heel portion of said top sole in relative position, and upper defining means detachably secured to said article of footwear at toe and heel portions thereof.

4,267,650

SHOE WITH REMOVABLE OUTSOLE

Peter Bauer, 6033 Hazelwood La., Bellevue, Wash. 98006

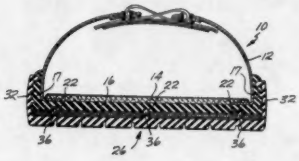
Filed Jul. 30, 1979, Ser. No. 61,924

Int. Cl.[3] **A43B** *3/24, 9/10*

U.S. Cl. 36—101 **6 Claims**

1. A shoe comprising an upper; an insole connected with the upper, said insole terminating along its peripheral margins in one part of a longitudinally extending bead and a longitudinally extending and mating recess mechanical locking means, said longitudinally extending bead part comprising beads which are round in section and beads which have a face disposed in a horizontal plane and a face which extends angularly and upwardly therefrom; a removable outsole; and a flexible

member connected with said outsole and terminating along its peripheral margins with the other part of the longitudinally



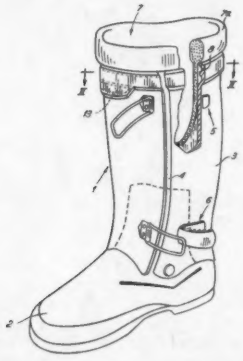
extending bead and longitudinally extending recess mechanical locking means.

4,267,651

BOOT FOR MOTORCYCLISTS PROVIDED WITH MEANS FOR REMOVING AIR FROM THE INSIDE

Amedeo Albano, Milan, Italy, assignor to Pierluigi Nava, Como, Italy

Filed Jan. 15, 1979, Ser. No. 3,533
Claims priority, application Italy, Jan. 25, 1978, 19579 A/78
Int. Cl.³ A43B *5/14, 7/06*
U.S. Cl. 36—131 **11 Claims**



1. A boot for motorcyclists equipped with means for removing air from the inside thereof, comprising one shoe-section made of a flexible synthetic material, one leg-section made of a stiff synthetic material, the last mentioned section having a vertical, lateral slit-shaped overlapping opening, provided with hook-like, closing and tensioning elements, and a small inner shoe, characterized in that a first circuit for a moving air stream is formed, provided with at least one air inlet-opening and with at least one discharge opening for the moving air, a second circuit for conducted air abutting at one end an air tap and terminating at the other end into the first circuit, said second circuit comprising a portion of the inner chamber of the small shoe, means for hermetically sealing the small shoe with the leg section and means for discharging water from the boot.

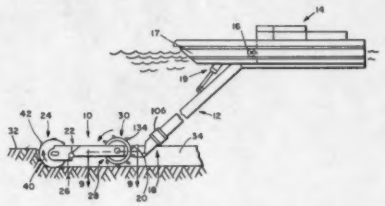
4,267,652

DREDGING SYSTEM AND APPARATUS

Joseph Senesac, P.O. Box 2462, Ft. Myers, Fla. 33902

Filed Apr. 27, 1979, Ser. No. 34,050
Int. Cl.³ E02F *3/88*
U.S. Cl. 37—66 **1 Claim**

1. In combination with a vessel floating on a body of water and a boom pivotally suspended from the vessel within said body of water, a dredging assembly for excavating material from a bottom surface, during travel in one direction, comprising a frame pivotally connected to said boom, rotary digging means mounted by the frame for rotation about a rotational axis transverse to said direction of travel, propelling wheel means pivotally mounted on the frame in spaced relation to the digging means for engagement with the bottom surface, powered means connected to the digging means and the propelling wheel means for rotation thereof to respectively excavate a trench and exert a propelling force on the frame in the direction of travel, means biasing the propelling wheel means in a direction maintaining the wheel means in engagement with the



bottom surface, and means for displacing the propelling wheel means and the digging means from submergence in water to a position on board the vessel, the displacing means comprising:

means connected between the vessel and the boom for rotating the boom in and out of water;

means connected between the boom and the frame for rotation therebetween;

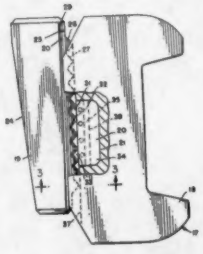
means connected between the frame and the propelling wheel means for rotation therebetween.

4,267,653

LOCKING DEVICE FOR EXCAVATING EQUIPMENT

Frederick C. Hahn, and Larren F. Jones, both of Beaverton, Oreg., assignors to ESCO Corporation, Portland, Oreg.

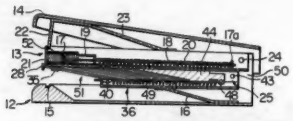
Filed Jan. 16, 1980, Ser. No. 112,160
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **9 Claims**



1. A locking device for securing a slip-over forwardly projecting adapter to an excavator lip comprising a C-clamp member straddling said lip while extending through vertically aligned openings in said adapter and lip, and a wedge member also extending through said aligned openings and forwardly of said clamp member, said clamp member having a forward facing wall confronting said wedge member and having a forwardly facing recess in said forward wall, a resilient lock element having forwardly facing horizontal serrations in said recess, said wedge member having a rearwardly facing wall with rearwardly facing serrations releasably lockable with the lock element serrations, said clamp member forward wall having a vertical slot therein developing forwardly projecting sidewalls, said wedge member in the portion adjacent said rearwardly facing wall being received in said slot whereby said

sidewalls cooperate with said wedge member portion and stabilizing the lockable engagement of said serrations.

4,267,654
TAGS FOR USE WITH STAPLERS
Hisao Sato, 10, Toyotamaminami-3-chome, Nerima-ku, Tokyo, Japan
Division of Ser. No. 949,444, Oct. 10, 1978, Pat. No. 4,182,474.
This application Jul. 31, 1979, Ser. No. 62,326
Int. Cl.[3] G09F *3/12*
U.S. Cl. 40—2 R **26 Claims**



1. For use with a stapler including a staple magazine having a staple throat at its front end, and further including a tag magazine located below said staple magazine and having a downward opening in its front end region underlying said staple throat and a pair of projections extending generally laterally inwardly of said downward opening from the opposite sides of said tag magazine at respective positions spaced rearwardly from the front end of said tag magazine;

a tag adapted to be stapled to at least one object, comprising:

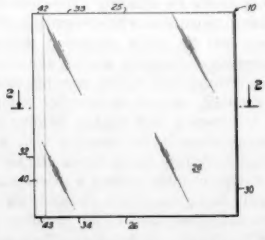
a piece of flat plate or sheet having a front edge, a rear edge, and a pair of side edges,

said tag being provided with a pair of recesses each extending inwardly from a respective one of said side edges at a position spaced rearwardly from said front edge of said tag by an amount corresponding to the rearward spacing of the corresponding one of said projections from said front end of said tag magazine,

the depth of each of said pair of recesses in said tag being slightly greater than the lateral extent of the associated one of said pair of projections of said tag magazine, and

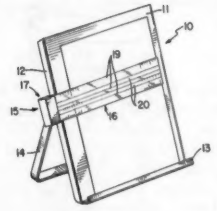
said tag being constructed such that a plurality of said tags are adapted to be detachably connected to each other in a predetermined overlapping and staggered relationship in series, thereby to form a tag stick adapted to be slidably received in said tag magazine with only the front end region of the foremost one of said tags underlying said staple throat and overlying the region of said downward opening frontwardly of said projections.

4,267,655
PRINT ALBUM
Sheldon Holson, Wilton, Conn., assignor to The Holson Company, Wilton, Conn.
Filed Apr. 16, 1979, Ser. No. 30,327
Int. Cl.[3] G09G *1/10*
U.S. Cl. 40—159 **3 Claims**



1. A composite photo album page comprising: a generally rectangular planar opaque filler member and an envelope element of clear synthetic resinous material enclosing said filler member, said envelope including first and second laminae mutually interconnected along a first edge thereof, and having oppositely disposed edges in mutually spaced relation overlying a corresponding edge of said filler member, said filler member being interconnected to said envelope element only in the area adjacent said oppositely disposed edges; and at least one elongated spacer member positioned parallel to and adjacent to said corresponding edge, and glued to a surface of said envelope element; whereby upon the binding together of a plurality of pages to form an album, means is provided for the accommodation of the swelling of the pages upon the insertion of photographic prints within the interstices between said filler member and the inner surfaces of said first and second laminae, said interstices being accessable from side edges of said envelope element disposed between said first and said oppositely disposed edges.

4,267,656
COPY HOLDER
Jack Solomon, Long Beach, N.Y., assignor to Esselte Pendaflex Corp., Garden City, N.Y.
Filed Sep. 4, 1979, Ser. No. 72,179
Int. Cl.[3] B41J *11/14*
U.S. Cl. 40—352 **2 Claims**

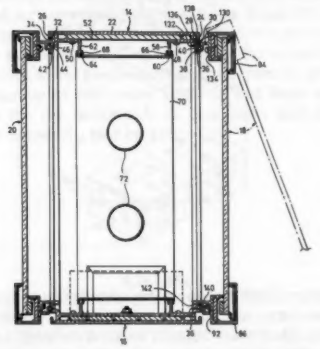


1. A copy holder comprising a stand having a support surface, a metal edge extending along at least one side of the support surface, a line guide extending across the support surface, a line guide housing disposed along an end portion of the line guide and in movable registration with the metal edge of the support surface, said housing including at least a pair of magnetic rollers rotatably mounted within the housing, each roller including a magnet having a North pole and a South pole and means for magnetically and rotatably contacting each magnetic pole with the metal edge, said means disposed adjacent said poles, the magnets of each roller are toroid shaped, the means for magnetically and rotatably contacting the North and South pole of each magnet with the metal edge comprises metallic, concentric end pieces rotatably engaged with the magnets at their poles, the diameter of the end pieces is greater than the diameter of the magnets and the magnetic rollers are biased in rotatable alignment against an inner wall of the housing.

4,267,657
ILLUMINATED SIGN
Werner Kloke, Whitby, Canada, assignor to Prem Gandy, Downsview, Canada
Filed Jun. 20, 1979, Ser. No. 50,362
Int. Cl.[3] G09F *13/04*
U.S. Cl. 40—549 **6 Claims**

1. An illuminated sign comprising a casing have top, side, bottom, front and back walls wherein a front edge of a top wall has a generally C-shaped groove extending therealong and opening to the front of the casing, said front wall comprising interconnected top, bottom and side frame elements supporting a light-transmitting panel, the top frame element being an

extrusion and comprising a generally L-sectioned flange extending from a rear surface thereof towards the interior of the casing, the distal limb of the flange being directed upwardly and terminating in a longitudinally extending bead, said distal limb being received within said C-shaped groove and said bead defining a hinging surface cooperating with an interior surface of said groove to support the front wall for hinging movement about an axis of said bead, said flange defining a drainage groove, said bead and groove having cooperating cylindrical



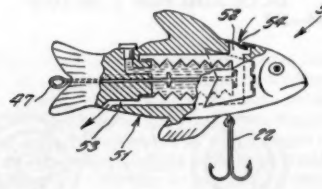
surfaces constituting means permitting controlled hinging movement of said front wall relative to said top wall from a closed position, over a large angle and constituting means permitting removal of said front wall from said top wall upon movement beyond said angle, said front wall being pivotable from said closed position to a first position in which it is held by engagement of said flange and said front edge of the top wall and from that first position to a second position beyond said large angle, in which it can be removed from the sign.

4,267,658

FISHING LURE SIMULATING FISH BAIT

Clarence C. Brown, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Sep. 20, 1977, Ser. No. 834,910
Int. Cl.³ A01K *97/02*
U.S. Cl. 43—42.06 **1 Claim**



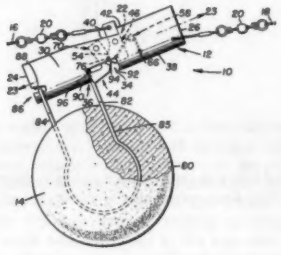
1. A fishing lure resembling a fish comprising a fish head and a hollow body, with a tail including a duct through the head communicating with the interior of said body including a rear duct from said body, said body containing material emitting the odor and taste of fish, whereby water entering the body mixes with said material and is emitted therefrom to attract fish, said tail having means for attachment to a fishing line in combination with a second means for causing flow from said rear duct responsive to the fishing line being pulled, whereby said second means opposes resiliently the pull on the fishing line and returns to a normal condition when there is no pull on the line, including a normally closed check valve disposed in the first said duct, said second means comprising a bellows with perforations engaging the fishing line to cause contraction of said bellows when the line is pulled said bellows being secured to a rear portion of said body and enclosing said material whereby contraction of said bellows causes material in said bellows to flow out of said bellows, releasing the pull on the fishing line causing expansion of said bellows to expel a mixture of said material and water through said outlet.

4,267,659

SINKER RELEASING APPARATUS

Roy Grasso, 5915 W. Wallbrook, San Jose, Calif. 95129

Filed Nov. 9, 1979, Ser. No. 93,025
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—43.12 **8 Claims**



1. In an apparatus useful in fishing having a body and a sinker releasably held thereto, the body being attachable between a leader line and a fishing line, and having a release mechanism for the sinker which is actuated by the leader line between a releasing position and a holding position, an improvement comprising:

said body having a notch therein and said release mechanism being mounted on said body with a portion of said release mechanism being adapted for pivotal movement within said notch responsive to actuation of said release mechanism;

said sinker having a first hook member protruding therefrom, said first hook member being receivable within said notch and being held therewithin by said release mechanism portion during said holding position; and

mounting means for pivotally mounting said sinker on said body and for permitting releasing of said sinker from said body responsive to pivoting of said sinker;

said release mechanism including a first pivotally mounted lever having said lead line swivelingly attachable to an arm thereof, a second pivotally mounted lever having said portion on an arm thereof and being closely adjacent said first lever, and biasing means for urging said first lever into engagement with said second lever to hold said second lever against pivotal movement within said notch.

4,267,660

STAKE FOR ANIMAL TRAPS

Larry L. Kielhorn, Holstein, Iowa 51025

Filed Jan. 29, 1979, Ser. No. 6,998
Int. Cl.³ A01M *23/28*
U.S. Cl. 43—96 **6 Claims**

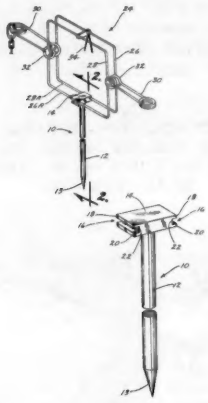
1. A stake for animal traps, comprising,

an elongated supporting post having an upper end,

a cross bar secured at its center to the upper end of said post and extending transversely in opposite directions from said post,

said cross bar having opposite ends, and a notch in each end adapted to receive frame members of a rotating frame animal trap; said notches being positioned and oriented in

the ends of said crossbar and being defined by upper and lower lip means to permit parallel trap rod portions to be



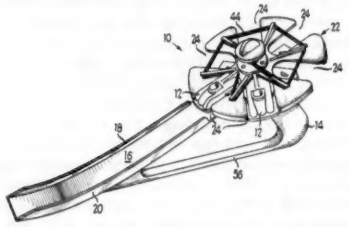
rotated into and out of said notches in directions towards and away from, respectively, the center of said crossbar.

4,267,661

MULTIPLE VEHICLE LAUNCHER

Stephen P. Hanson, Brea, Calif., assignor to Marvin Glass & Associates, Chicago, Ill.

Filed Jan. 21, 1980, Ser. No. 113,718
Int. Cl.[3] A63H *33/00*; F41B *3/02*
U.S. Cl. 46—1 K **17 Claims**



1. A toy for launching a plurality of objects mounted on said toy, comprising:

a vertically inclined launching ramp for launching said objects onto a surface such as a floor or the like;

a carrier for said objects to be launched rotatably mounted on said ramp;

means on said carrier for holding at least one of said objects to be launched;

launching means on said holding means for launching said object; said launching means including a stored energy element secured to said holding means in position for simultaneously biasing all of said plurality of said objects for launching each of said objects; and

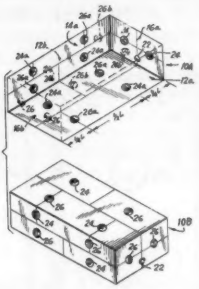
means for rotating said carrier to align said holding means with said launching ramp.

4,267,662

INFLATABLE MATING BUILDING BLOCKS

Peter Gordy, Spring Valley, N.Y., assignor to Gordy International, Inc., New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,018
Int. Cl.[3] A63H *33/08, 3/06*
U.S. Cl. 46—25 **4 Claims**



1. Building block toy apparatus comprising:

an inflatable member having side surfaces formed of flexible plastic sheet material, said member defining, upon inflation, a polyhedron having three pairs of opposed, substantially parallel side surfaces, two of said pairs of side surfaces defining longitudinally extending side walls and the third pair of side surfaces defining transversely extending end walls; and

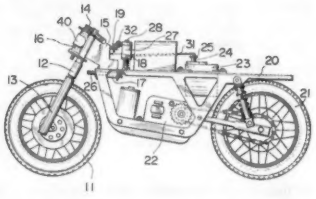
connector means integrally formed on said side and end walls of said inflatable member for detachably fastening at least one additional inflatable member thereto, said connector means formed on each side wall comprising at least one male connector element including a bulbous-shaped protrusion which is expandable upon inflation of said inflatable member and at least one female connector element including a recess defined in said side wall.

4,267,663

RADIO-CONTROLLED STEERING DEVICE FOR TOY MOTORCYCLES

Sin Nagahara, 32–12, Minamicho, Itabashiku, Tokyo, Japan

Filed Oct. 25, 1979, Ser. No. 88,311
Int. Cl.[3] A63H *30/04, 17/36, 11/10*
U.S. Cl. 46—254 **3 Claims**



1. A radio-controlled toy motorcycle comprising:

a frame having a longitudinal central axis and rotatably supporting a rear wheel which rotates about an axis at right angles to the central axis of the frame,

a pivot shaft extending along the central axis of the frame of said toy motorcycle and being secured to the front end of the frame;

a connecting block coupled to said pivot shaft for rotation about the pivot shaft axis,

a front wheel handle shaft rotatably mounted to the front end of said connecting block for rotation about a front

wheel handle shaft axis inclined to the pivot shaft axis to provide a caster effect;

a fork connected to said front wheel handle shaft and aligned therewith,

means for rotatably supporting a front wheel within said fork for rotation about an axis at right angles to the inclined pivot axis of said front wheel handle shaft,

a servomotor mounted to said frame and driven by signals from a transmitter; and

a transmission mechanism for transmitting the rotating force of said servomotor to said connecting block for rotating said connecting block about the axis of said pivot shaft to cause said front wheel to rotate about the inclined axis of said front wheel handle shaft and said frame to be banked by reaction of said caster effect of said front wheel to cause the toy motorcycle to turn easily and smoothly under nonaccelerated banking.

4,267,664

PROCESS FOR CULTIVATION OF MUSHROOMS AND MUSHROOM NURSING PLANT FOR CARRYING OUT THE PROCESS AND AIR CONDITIONING PLANT FOR THE MUSHROOM NURSING PLANT

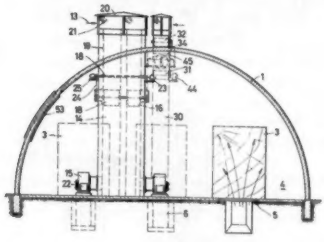
Detlef Henke, Fabeckstr. 57, 1000 Berlin 33, Fed. Rep. of Germany

Filed May 31, 1978, Ser. No. 911,216

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2726176; Sep. 30, 1977, 2744684

Int. Cl.[3] A01G *1/04*

U.S. Cl. 47—1.1 **9 Claims**



1. Mushroom cultivation plant with nutrient compost arranged in air conditioned rooms, the nutrient compost being placed to form an extended hilly bed having a predetermined cross-section of substantially 2×2 m in the beginning of a cultivation cycle, comprising: an air duct arranged below the bed and covered with a covering grill having transverse slits for ventilating and tempering the compost by controlled air supply through said transverse slits; said air duct emitting tempered air and said transverse slits having a length of 40 to 60 cm and width of 2 cm; said covering grill having a cross-section which reduces from one end towards another end, a feeding air shaft extending from a fresh air supply end having at least one fan and at least one control damper and leading to said air duct, a vent running in said feeding air shaft for circulating air leading into said rooms, a circulation air damper connected with said control damper, an auxiliary air duct between two connected auxiliary control dampers being connected to an air supply shaft for interior air, said air supply shaft extending into an upper area of said rooms over substantially the whole length of the beds and having at least one fan and air distributor means.

4,267,665

DOUBLE WALLED THERMAL PROTECTIVE COVERINGS

Volney Wallace, Terra, Box 1 West, and Carlos F. A. Pinkham, Terra, Box 4 East, both of Dugway, Utah 84022

Continuation-in-part of Ser. No. 863,801, Dec. 23, 1977, Pat. No. 4,137,667. This application Dec. 13, 1978, Ser. No. 968,745

Int. Cl.[3] A01G *13/00*

U.S. Cl. 47—26 **17 Claims**

1. A double walled tubular device for thermally protecting plants comprising an inner tubular wall having a top and bottom end, an outer tubular wall of substantially the same height having a top and bottom end, said inner and outer tubular walls being continuous with each other at the bottom ends and unjoined at the top ends thereof creating an annular space between said walls which is open at the top, said inner and outer tubular walls being joined together to divide said annular space into compartments which may be filled from the top with water or water and air.

4,267,666

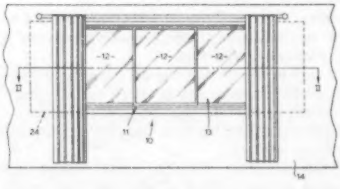
SHIELD FOR A WINDOW

James D. Davidson, 2003 Lansing St., Portage, Mich. 49081

Continuation of Ser. No. 912,186, Jun. 5, 1978, abandoned, which is a continuation of Ser. No. 776,488, Mar. 10, 1977, abandoned. This application May 16, 1979, Ser. No. 39,449

Int. Cl.[3] E05C *7/02*

U.S. Cl. 49—63 **10 Claims**



1. In combination with a window unit mounted in a building structure having upright walls, said window unit including a window frame and glass panel means mounted in said window frame, the improvement comprising a shutter unit having first and second parallel track means spaced inwardly of said window unit and having a spacing therebetween at least equal to one dimension of said window unit, said track means extending parallel to the plane of said glass panel means;

laminate insulative shield means mounted in said track means for movement between positions adjacent the side of said window unit and in front thereof, to block off the entirety of said glass panel means, low friction means for supporting said laminate insulative shield means for movement on said track means, said laminate insulative shield means including a frame movably supported on said track means and having an imperforate surface layer and an insulation material layer mounted side-by-side in the frame, said imperforate surface including a metallic sheet against which is engaged said insulative material, said insulative

material having little resistance against breakage when forces are applied in directions perpendicular to the plane thereof, said metallic sheet providing a protective barrier from the outside and a rigidification of said insulative material against the effects caused by forces applied from the outside in directions perpendicular to the plane thereof; and

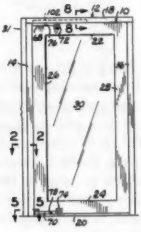
seal means for effecting a seal around the periphery of said glass panel means and between said window unit and said insulative shield means thereby defining a sealed chamber.

4,267,667

BALANCED DOOR

Gary G. Ingham, 3534 B Newcastle Rd., Oklahoma City, Okla. 73119

Filed Aug. 30, 1979, Ser. No. 71,335
Int. Cl.³ E05D *15/30*
U.S. Cl. 49—252 **5 Claims**



1. In an entryway door having stiles and top and bottom rails and having a pair of arms pivotally connected with the respective rails intermediate their ends for horizontal swinging movement of the door about a vertical axis and projecting horizontally into a door side jamb formed by a channel member coextensive with the adjacent door stile and having the legs of the channel projecting from its bight portion toward the door, the improvement comprising:

a shaft disposed within the side jamb coextensive with the door height and rigidly connected at its respective end portions with said arms;

a plurality of vertically spaced bearings secured within said jamb and journalling intermediate portions and respective end portions of said shaft,

each said bearing being characterized by a bearing block extending transversely between the side jamb legs and secured to the side jamb bight portion; and,

tension means connected with said side jamb for maintaining the latter vertical,

said tension means including a pair of angle brackets secured to the surface of the side jamb bight portion facing said door adjacent its respective ends,

an elongated flexible member secured to and extending tautly between said angle brackets in overlying relation with respect to at least one said bearing block, and,

screw threaded bolt means on at least one end of said flexible member for increasing or decreasing its tension.

4,267,668

POWER WINDOW LIFT ASSEMBLY

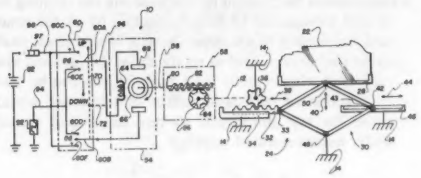
Ronald E. Natinsky, 6727 Rolling Vista, Dallas, Tex. 75248

Filed Apr. 26, 1979, Ser. No. 33,529
Int. Cl.³ E05F *15/08*
U.S. Cl. 49—349 **3 Claims**

1. In a motor vehicle having a source of electrical current for providing operating power to accessories and having a door with a movable window and a mechanical crank assembly coupled intermediate the door and window, said crank assembly including a crank stub for engaging a manually operable crank handle, the combination with the mechanical crank assembly of an electromechanical drive assembly for applying a rotary cranking force to the crank stub, said electromechanical drive assembly comprising:

an electrical drive motor mounted on the door having a field winding and a rotor member for producing a rotary driving force in response to electrical excitation of the field winding;

a flexible drive shaft coupled intermediate the rotor and the



crank stub for turning the crank stub in response to rotation of the rotor;

a manually operable switch assembly coupled intermediate the vehicle power source and the field winding for applying operating power to said drive motor; and,

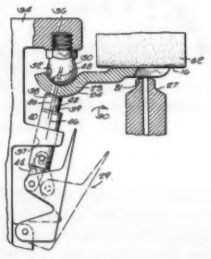
a self-interrupting and self-resetting current responsive switch coupled in series electrical circuit relation intermediate said power source and the field winding of said motor.

4,267,669

METHOD AND APPARATUS FOR GRINDING SMALL CUTTING BLADES

Spencer C. Schantz, 5880 Anchorage Rd., Oconomowoc, Wis. 53066, and Leland A. Rupenthal, Oconomowoc, Wis., assignors to Spencer C. Schantz, Oconomowoc, Wis.

Filed Jan. 21, 1980, Ser. No. 113,937
Int. Cl.³ B24B *3/52*
U.S. Cl. 51—5 D **9 Claims**



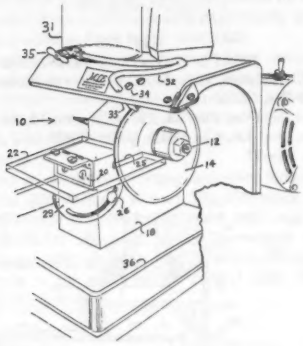
1. A method of grinding planar cutting surfaces of cutting blades in which substantial portions are non-planar, the blades including a planar cutting portion and a shank and inside and outside concentric arcuate surfaces comprising the steps of providing a work table with a pair of clamping jaws for each of the cutting blades, including a movable jaw and a fixed jaw, and in which one of said jaws has a surface with a curvature complementary to the curvature of the arcuate blade shank portions, and means for releasably clamping the jaws against the arcuate shank surfaces, with the bite of the jaws creating a moment of force to fulcrum the blade portion about the contact point with one of said jaws and against a spaced work rest supported on the work table to expose the blade surface to be ground and rotating the work table while moving the table along a feed axis parallel to the axis of rotation of a rotary grinding wheel.

4,267,670

COMBINED DUPLICATOR AND PREFORMER FOR LAPIDARY USE

Gene C. Mason, 11531 Tulary Way, Marysville, Wash. 98270

Filed Sep. 15, 1978, Ser. No. 942,691
Int. Cl.³ B24B *9/16*
U.S. Cl. 51—101 R **3 Claims**



1. In combination,
a grinding machine having a grinding wheel with a rotary axis and a grinding surface; and
a fixture for a workpiece to be ground comprising,
a mounting base presenting an elongated slideway defining a slide plane,
means for swing mounting the mounting base on the grinding machine to swing toward and away from the grinding surface about a swing axis extending parallel to said slide plane and laterally at right angles relative to the length of said slideway,
elongated slide means in the slideway arranged to selectively slide in a fore and aft direction along the slideway toward and away from the grinding surface,
clamping means for holding said slide means against movement from a selected position along the slideway,
a guide bar on the slide means projecting laterally beyond one longitudinal side of the slide means and mounting base and presenting a planar guide face occupying a plane perpendicular to said slide plane,
a swing arm pivotally mounted on the slide means on a pivotal axis perpendicular to said slide plane and projecting by its free end in the same general direction as said guide bar, said swing arm presenting a journal near its free end which is parallel to said pivotal axis,
means rotatably mounted in said journal for holding a template opposite said guide face and for holding a workpiece coaxially of said template and opposite said grinding surface whereby the workpiece may be in engagement with the grinding surface while the template is turned while in engagement with the guide face.

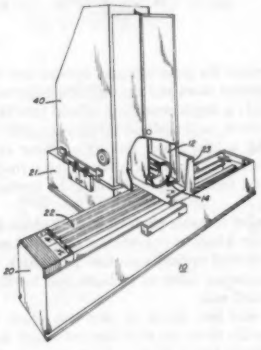
4,267,671

POSITIONING OF AN ABRASIVE BELT ON A GRINDING MACHINE

Richard Rettew, Newmanstown, Pa., assignor to Contraves Goerz Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1978, Ser. No. 936,349
Int. Cl.³ B24B *21/00, 21/18*
U.S. Cl. 51—135 BT **12 Claims**

1. A belt grinding machine, for grinding a workpiece, comprising:
an elongated fixed bed;
a table for receiving the workpiece supported for back and forth movement along said elongated fixed bed;
power means for providing continuous oscillating back and forth movement to said table while grinding the workpiece;
a base secured to said bed and extending therefrom transverse to the longitudinal axis of said bed;
a vertical column supported from said base for back and forth movement transverse to the movement of said table;
power means for providing continuous reciprocating back and forth movement to said vertical column along said base normal to the longitudinal axis of the bed while grinding the workpiece;
a contact wheel slidably supported for up and down movement on said vertical column;
an idler wheel slidably supported on said vertical column, above said contact wheel, for up and down movement on said column;
a grinding belt which is wider than the workpiece disposed around said contact wheel and said idler wheel above said table for back and forth movement with said column while grinding;
table speed control means which is adjustable for controlling the speed of oscillation of said table;
table travel control means which is adjustable for controlling the travel of said table;
column speed control means which is adjustable for controlling the speed at which said column reciprocates; and
column travel control means which is adjustable for controlling the travel of said column which moves said grinding belt back and forth over the workpiece when grinding.



7. A belt grinding machine comprising:
an elongated fixed bed;
a vertical column supported for reciprocating movement along an axis transverse to the longitudinal axis of said elongated fixed bed;
column reciprocating means for continuously reciprocating said vertical column back and forth;
an idler pulley supported from said column and slidable thereon;
a contact pulley supported from said column, spaced apart from said idler pulley, and slidable on said column;
a continuous belt having coated abrasive on the outside thereof disposed around said idler pulley and said contact pulley;
tensioning means for biasing said idler pulley and said contact pulley apart to put tension on said belt;
a table supported on said elongated bed for movement parallel to the longitudinal axis of said bed;
table reciprocating means for reciprocating said table beneath the contact pulley which is supported from said vertical column;
feed means for moving said contact wheel toward said table;
a spindle having a circular center portion defining a first longitudinal axis and eccentric spaced apart ends defining a second longitudinal axis extending transverse to the first longitudinal axis;

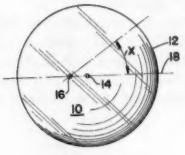
bearing means supporting said idler pulley from the circular center portion of said spindle for rotation thereabout;
adjusting means disposed on said column for supporting and rotatably positioning the eccentric ends of said spindle to adjust the tilt of the first longitudinal axis, which is defined by the circular center portion, relative to said column;
photoelectric sensing means for sensing the position of said belt, and,
control means responsive to said photoelectric sensing means for controlling said adjusting means to rotate the position of the eccentric ends of said spindle to maintain said belt at a desired position.

4,267,672

LENS PROCESSING METHOD

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Cleveland, Ohio

Filed Jun. 4, 1979, Ser. No. 44,991
Int. Cl.[3] B24B *1/00*
U.S. Cl. 51—284 R **14 Claims**



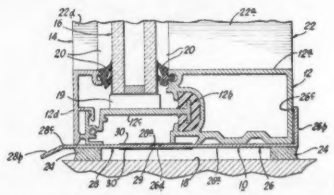
1. A method for generating an optical lens from a lens blank having opposed faces and a peripheral edge and which method requires only a single mounting of said lens blank to an associated lens block, said method comprising the steps of:
providing a lens blank having a frame center axis and a peripheral size substantially greater than the peripheral size of a finished optical lens to be formed from said lens blank;
providing a reusable preformed lens block having a peripheral size which is not greater than said peripheral size of said finished optical lens, said lens block including means for mounting same to a chuck and having a longitudinal mounting axis;
affixing said lens block to said lens blank so as to extend outwardly from the face thereof which is opposite to the lens blank face which is to be processed and with said longitudinal mounting axis substantially aligned with said frame center axis;
placing said lens block in operative mounted communication with a first chuck associated with lens surface generating apparatus in a manner such that said frame center axis of said lens blank and said longitudinal mounting axis of said lens block are substantially coaxial with the longitudinal axis of said first chuck;
adjusting the position of said lens block in said first chuck for moving said lens blank to accommodate a predetermined desired amount of decentration whereby the desired optical center axis in said lens blank is positioned generally coaxial with said first chuck longitudinal axis;
generating the desired optical surface configuration on said lens blank processed face and thereafter removing said lens block with said lens blank from said first chuck;
locating said lens block with lens blank in a second chuck associated with at least one second processing apparatus;
fining and polishing said lens blank processed face on said at least one second processing apparatus and thereafter removing said lens block with lens blank from association therewith;
positioning said lens block with lens blank in operative communication with third processing apparatus;
providing a final desired contour for said lens blank peripheral edge on said third processing apparatus to provide a finished optical lens having a peripheral size not smaller than the peripheral size of said lens blank and thereafter removing said lens block with lens blank from association therewith; and,
deblocking the finished lens from said lens block for reuse of said lens block in carrying out the preceeding method steps on additional lens blanks.

4,267,673

HEAT INSULATING FLASHING

Ellwin L. Coulston, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

Filed Feb. 15, 1979, Ser. No. 12,284
Int. Cl.[3] E04D *13/00*; E06B *1/62*
U.S. Cl. 52—97 **18 Claims**



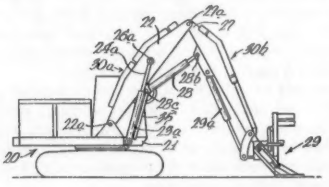
1. Insulated flashing comprising:
an inner metal element having an outer edge and an upstanding flange;
an outer metal element having an inner edge in spaced apart relation with said outer edge; and
a joining element of insulating material continuously interconnecting said metal elements between said spaced apart edges.

4,267,674

GUARD STRUCTURE FOR FLUID CONDUITS OF HYDRAULIC CYLINDERS OF MOBILE APPARATUS

Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 16, 1979, Ser. No. 98,145
Int. Cl.[3] B66C *23/06*
U.S. Cl. 52—115 **9 Claims**



1. In a mobile apparatus (**20**) having a chassis (**21**), a boom (**22**) pivotally mounted (**22*a***) on said chassis, hydraulic cylinders (**23*a*** and **23*b***) with piston rods (**24*a*** and **24*b***) at the two sides of said boom (**22**), spherical mounting joints (**25*a*** and **25*b***) attaching the cylinders (**23*a*** and **23*b***) to the chassis, spherical connecting joints (**26*a*** and **26*b***) operatively attaching the rods (**24*a*** and **24*b***) to the sides of the boom (**22**), first conduits (**31*a*** and **31*b***) with fixtures (**31*c*** and **31*d***) and couplings (**32*a*** and **32*b***) for connecting the head ends of said cylinders (**23*a*** and **23*b***) to a hydraulic pressure source on the chassis (**21**), and second conduits (**33*a*** and **33*b***) with fixtures (**33*c*** and **33*d***) and couplings (**34*a*** and **34*b***) for connecting the rod ends of said cylinders (**23*a*** and **23*b***) to said hydraulic pressure source,

guard means (35) for said conduits (31*a*–31*b* and 33*a*–33*b*) and couplings (32*a*–32*b* and 34*a*–34*b*) comprising, in combination:

first brackets (36*a* and 36*b*) fixedly supported on the head ends of said cylinders (23*a* and 23*b*) immediately adjacent said first conduit fixtures (31*c* and 31*d*);

second brackets (37*a* and 37*b*) fixedly supported on the rod ends of said cylinders (23*a* and 23*b*) immediately adjacent said second conduit fixtures (33*c* and 33*d*);

a unitary, rigid guard member (38) which has a central plate (39) spanning the cylinders (23*a* and 23*b*), the first and second conduits (31*a* and 31*b*–33*a* and 33*b*) and the first and second couplings (32*a* and 32*b*–34*a* and 34*b*) and side webs (40*a* and 40*b*) flanking all of said cylinders, conduits and couplings;

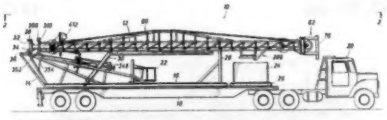
and mounting means (41) supporting said guard member (38) on said first (36*a*–36*b*) and second (37*a*–37*b*) brackets, said mounting means (41) including bolts (48) and spacer means (49-50-51) affording limited movement of said guard member (38) relative to said cylinders (23*a* and 23*b*) transversely in the plane of the central plate (39) and axially of the bolts (48).

4,267,675

WELL WORKING RIG

Chudleigh B. Cochran, Houston, Tex., assignor to Joe R. Brown, Houston, Tex.

Filed May 4, 1979, Ser. No. 35,848
Int. Cl.[3] B66C *23/06*
U.S. Cl. 52—118 50 Claims



1. Apparatus for manipulating pipe members comprising:

(a) mast means, including first pole means and second pole means selectively moveable along said first pole means, whereby said mast means may be selectively extended and retracted;

(b) chain drive means joined to said second pole means and selectively operable for movement of chain generally along said second pole means; and

(c) hoisting mechanism means, joined to said first pole means, and selectively operable to engage said chain drive means whereby sid chain drive means may be so operated to cause said second pole means to so move along said first pole means.

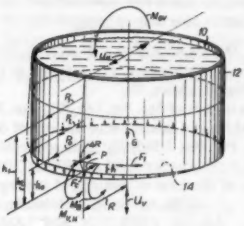
4,267,676

EARTHQUAKE RESISTING TANK AND METHODS OF CONSTRUCTING SAME

Tadeusz J. Marchaj, Pt. Washington, Long Island, N.Y., assignor to Preload Technology, Inc., Garden City, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,102
Int. Cl.[3] E04H *9/02*; E04B *1/98*; E02D *27/34*
U.S. Cl. 52—167 42 Claims

1. A tank for containing a liquid adapted to withstand a force acting upon a side wall thereof under earthquake conditions, including a side wall and a reinforcing means surrounding the wall and banding it in a stripe configuration at a location of maximum combined stresses resulting from gravitational, horizontal and vertical accelerations of the tank and its contents under earthquake conditions.

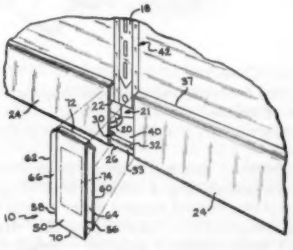


4,267,677

FILLER INSERT FOR A WALL BASEBOARD ASSEMBLY IN A SPACE DIVIDER SYSTEM

Travis M. Randolph, Saugatuck, and Thomas J. Newhouse, Grand Rapids, both of Mich., assignors to Herman Miller, Inc., Zeeland, Mich.

Filed Apr. 24, 1979, Ser. No. 32,944
Int. Cl.[3] E04F *19/04*
U.S. Cl. 52—242 1 Claim



1. In a baseboard assembly positioned along the lower edge of a wall unit and comprised of a plurality of upright cover members arranged end to end and support means mounting said cover members in said upright position along said wall unit, each of said cover members having a front surface and a rear surface facing said wall unit, at least a pair of adjacent ones of said cover members being spaced apart to form an opening between the adjacent ends thereof, a removable filler section positioned in said opening and spanning substantially the entire distance between said adjacent ends, said filler section comprising a main body having longitudinally spaced apart opposite ends and an outer surface generally conforming with the outer surfaces of said adjacent cover members, and coacting means maintaining said filler section in an interposed position in said opening such that the outer surface of said main body is substantially flush with the outer surfaces of said pair of adjacent cover members, said coacting means comprising flange portions extending longitudinally from said main body at the opposite ends thereof, said flange portions being offset rearwardly with respect to said main body and engaging the rear surfaces of said pair of adjacent cover members to restrain forward movement of said filler section from said interposed position, said main body having an upper portion in front of and abutting said wall unit and a lower portion in front of and abutting said support means to restrain rearward movement of said filler section from said interposed position, said flange portions and said abutting portions coacting with said wall unit, said support means, and said side cover members to main-

tain said filler section in said interposed position, said filler section being releasable forwardly by removal of one or both of said adjacent cover members from said support means.

4,267,678

INSULATED ROOF STRUCTURE

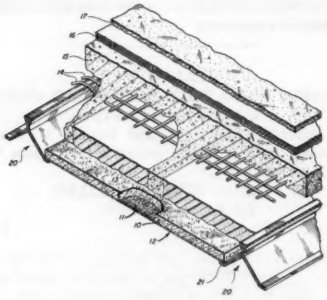
Frank E. Carroll, Barrington, Ill., assignor to Carroll Research, Inc., Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 545,303, Jan. 30, 1975, Pat. No. 3,962,841, which is a continuation-in-part of Ser. No. 457,996, Apr. 4, 1974, Pat. No. 3,965,641. This application Jun. 15, 1976, Ser. No. 696,213

The portion of the term of this patent subsequent to Jun. 15, 1993, has been disclaimed.

Int. Cl.[3] E04B *1/24;* E04C *2/10*

U.S. Cl. 52—302 3 Claims



1. A poured concrete insulated deck structure comprising:

a series of parallel sub-purlins having horizontal flanges extending outwardly at the lower portion of said sub-purlin;

high temperature resistant, moisture permeable formboard, said formboard being a mineral fiber structural board having plastic bonded mineral fibers with an integral mat facing reinforced with parallel glass fiber strands, resting on said flanges between adjacent sub-purlins, said formboard having secured to its upper surface rigid synthetic polymer foam having spaces vertically therethrough providing communication from the upper side of said formboard to the upper side of said foam, said spaces having an area of about 5 to about 20 percent of the area of said formboard;

poured concrete adjacent the upper side of said foam and extending through said spaces contacting the upper side of said formboard, said concrete completing drying by escape of moisture through said formboard;

reinforcing wire mesh over said foam; and

a waterproof wearing surface to the exterior of the poured concrete.

4,267,679

INSULATED BUILDING PANEL WALL CONSTRUCTION

Leroy Thompson, Sewickley, Pa., assignor to Steelite, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 754,756, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 556,632, Mar. 10, 1975, abandoned. This application Feb. 22, 1979, Ser. No. 13,910

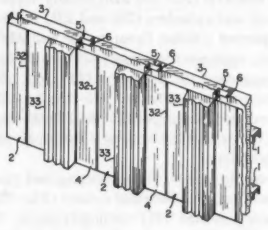
Int. Cl.[3] B44F *7/00;* E04D *1/34;* E04C *1/10;* E04B *1/62*

U.S. Cl. 52—311 9 Claims

1. A wall construction comprising:

a. a plurality of spaced girts defining a framework,

b. a plurality of hollow insulating construction panels comprising opposed interior and exterior sheet metal sections secured together through yieldable insulating gaskets, said sections together defining interior and exterior walls and opposed inter-engaging panel edges, one of said edges provided to receive fasteners, said edges having generally S-shaped central sections, said panel edges having peripheral faces extending between said S-shaped central sections and said walls, said panels secured at their fastening



edge to said girts, each of said panels inter-engaging the adjacent panel to form a continuous insulating wall; and,

c. at least one feature strip comprising an ornamented surface, said feature strip secured to the face of said wall by means positionable between the interengaging edges of said panels.

4,267,680

TILE FOR THE CONSTRUCTION OF WALLS OR DIVERSE DISASSEMBLABLE SURFACES

Jean Delattre, 245a, Chemin du Roucas Blanc, Marseille, France (13007)

Filed Mar. 22, 1979, Ser. No. 22,943

Claims priority, application France, Mar. 24, 1978, 78 09193

Int. Cl.[3] E04F *13/08*

U.S. Cl. 52—384 13 Claims

1. A tile having top and bottom faces for use in constructing dismountable walls, floors and the like, comprising a plurality of flexible clips adapted to clip onto a frame arranged along one of its faces, said tile further comprising a plurality of bores extending through said tile, each of said clips comprising two elastic fingers, each of said bores being aligned with one of said clips and positioned to extend between each of said fingers whereby said tiles may be conveniently and securely stacked on one another.

4,267,681

RESILIENT STRUCTURES

Peter C. Dickson, Runcorn, England, assignor to Dunlop Limited, London, England

Filed Apr. 9, 1976, Ser. No. 675,281

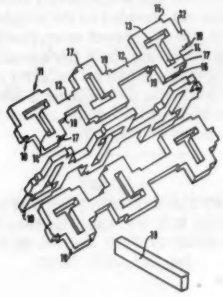
Claims priority, application United Kingdom, Apr. 16, 1975, 15584/75

Int. Cl.[3] E04C *2/42*

U.S. Cl. 52—664 34 Claims

1. A resilient three-dimensional structure comprising: an interlocked assembly of a plurality of parallel strips arranged such that successive strips lie in planes angled relative to one another, each strip being of substantially rectangular cross-sectional shape and formed with a plurality of apertures and projections in engagement respectively with projections and apertures of another strip of the plurality, the projections in one strip of a resilient deformable material engaging apertures in another strip to retain the two strips against relative move-

ment in a first direction perpendicular to the direction of the length of said one strip, and the apertures in said one strip being engaged by projections of said other strip to retain the two strips against relative movement in a second direction perpendicular to the direction of the length of said one strip; and, a plurality of retaining rods in contact with said strips and extending through said apertures in a direction perpendicular to the direction of said strips to provide an additional means retaining the strips in position relative to one another.

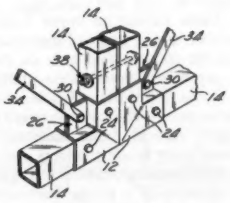


4,267,682

BUILDING PANEL

Neal G. Fowler, 872 Albany Ave., Ventura, Calif. 93003, and Charles L. Hedrick, 205 W. Rosa, Oxnard, Calif. 93030

Filed May 7, 1979, Ser. No. 36,437
Int. Cl.³ E04B *1/56;* E04C *2/38*
U.S. Cl. 52—657 **5 Claims**



1. A panel to be interconnected with several other similar panels to construct a building, said panel being polygonal shaped, said panel comprising:

a plurality of corner members, each said corner member having a pair of openings, the longitudinal center axis of each of said openings intersecting, each said opening having a center line, each said corner member being constructed of two separate identical parts connected together by a diagonal weld in a facing and abutting relation ship;

a plurality of elongated tubular members, one end of a said tubular member to be telescopingly located within one of said openings of a said corner member with the opposite end of the said tubular member to be telescopingly located within a said opening of another said corner member, each said opening of each said corner member being occupied by a said tubular member with said tubular members being arranged to form an enclosed area;

brace means located between a pair of said corner members and attached thereto, said brace means comprising a pair of brace members interconnected by connecting means, said connecting means being operable to vary the longitudinal length of said brace means, said brace means located substantially along a single axis, said single axis being inclined in respect to the longitudinal center axis of each said elongated tubular member; and

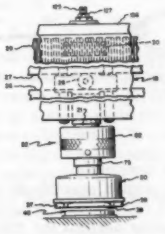
each said corner member including a sheet material web section, each said web section including attachment means to facilitate securement with said brace means, said brace means being fixedly secured to said web section, each said web section having an inside surface, said inside surface lying in a plane which passes through said center point whereby said web section is offset in respect to said center point.

4,267,683

COUPLING MECHANISM FOR CAPPING MACHINE CHUCK

Shelby A. Harrington, Snyder, N.Y., assignor to A-T-O Inc., Willoughby, Ohio

Filed Nov. 29, 1979, Ser. No. 98,518
Int. Cl.³ B67B *3/20;* B65B *7/28*
U.S. Cl. 53—331.5 **10 Claims**



1. In an apparatus for applying a screw-type closure element to a container, the apparatus having a rotary drive spindle adapted to be disposed above a container, a chuck sleeve, and a coupling mechanism interconnecting said spindle and said sleeve, said coupling mechanism including a floating ring, a coupling hub, and means providing a drive connection between said coupling hub and said floating ring, the improvement comprising:

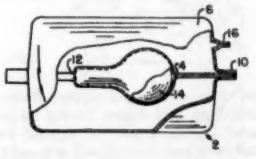
said means providing a drive connection between said coupling hub and said floating ring comprising lugs formed integrally with said coupling hub and extending below said coupling hub, and said floating ring having recesses receiving said lugs.

4,267,684

METHOD OF PACKAGING DELICATE ARTICLES

Charles J. Ambrose, 2230 Benton St., Richland, Wash. 99352

Division of Ser. No. 613,402, Sep. 15, 1975, Pat. No. 4,190,158.
This application May 29, 1979, Ser. No. 43,209
The portion of the term of this patent subsequent to Feb. 26, 1997, has been disclaimed.
Int. Cl.³ B65B *23/22*
U.S. Cl. 53—472 **2 Claims**



1. A method of packaging comprising:

(a) providing a container comprising an outer envelope of flexible sheet material and an elongated inner envelope of

flexible sheet material, within and extending across said outer envelope, said outer envelope having normal dimensions in all directions greater than said inner envelope, said outer envelope being sealed to said inner envelope solely adjacent the ends of said inner envelope, said outer envelope being adhesively joined to the walls of a surrounding, substantially rigid casing;

(b) inserting said article into said inner envelope; and

(c) changing the relative pressures in said envelopes in such a manner as to make the pressure in the inner envelope substantially less than that in said outer envelope, thereby collapsing said inner envelope about said article.

4,267,685

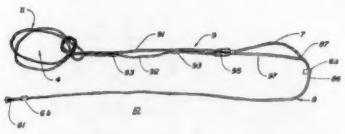
BULLROPE

John J. Cragin, 1517 Sunnyridge Rd., Nampa, Id. 83651

Filed Jan. 21, 1980, Ser. No. 114,124

Int. Cl.³ B68B *1/00;* **A01K** *29/00*

U.S. Cl. 54—1 **6 Claims**



1. A bullrope comprising:

a main body portion operable to surrond the girth of an animal, said body portion being divided so as to form a handle member adapted for grasping by a rider of the animal;

a loop member having an eye, attached at one end of said body portion to define one end of the bullrope and incapable of moving along the body portion;

a tail portion attached at an opposing end of said body portion, said tail portion having a free terminal end insertable through the eye of said loop member to cinch the bullrope about the girth of an animal, and

fastening means located on said tail portion, said fastening means operable to form a temporary loop in said tail portion adapted for grasping.

4,267,686

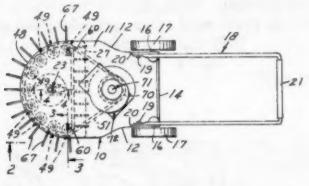
LAWN MOWER HAVING FLEXIBLE FILAMENT CUTTER ELEMENTS

Charles A. Heath, 2239 N. River Rd., Saint Clair, Mich. 48079

Filed May 31, 1979, Ser. No. 44,045

Int. Cl.³ A01D *53/14*

U.S. Cl. 56—12.7 **13 Claims**



1. A lawn mower having a support frame, a power drive means mounted on said frame having an output shaft, said support frame having a pair of ground engaging support wheels at the rear end thereof and a handle member operatively attached to the rear end of the frame, characterized in that:

(a) said support frame includes a frame plate having an arcuate front end formed as a portion of a circle;

(b) a plurality of driven pulleys are each rotatably mounted on the frame plate with their axes arcuately disposed in positions to form a portion of a circle adjacent the arcuate front end of the frame plate;

(c) said driven pulleys are drivably connected with the power drive means output shaft; and,

(d) an endless carrier belt is operatively mounted around the driven pulleys and provided on the periphery thereof with a plurality of laterally spaced apart, flexible filament cutter elements which are flung horizontally outward into cutting positions by centrifugal force, for cutting lawn and vegetation, when the driven pulleys are driven by the power drive means to drive the carrier belt around the arcuately disposed driven pulleys.

4,267,687

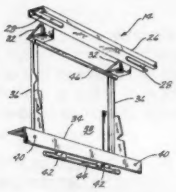
COMBINATION COMBINE AND HAY HEAD

Harley D. Neuhring, R.R. #1, Kanawha, Iowa 50447

Filed Oct. 19, 1979, Ser. No. 86,412

Int. Cl.³ A01D *73/00*

U.S. Cl. 56—14.4 **7 Claims**



1. The combination of a grain combine having a forward end, an intake opening, and a hydraulic circuit, and a forage harvester rotatable forage pick-up means having a discharge opening and a plurality of clevis attachment elements, comprising,

an adapter frame having an upper horizontally disposed frame member having a pair of spaced apart slots adapted to receive the conventional hubs on the upper forward end of a combine a lower horizontally disposed frame member having a plurality of holes adapted to receive bolts to be secured to the lower forward end of a combine, spaced apart vertical frame members connecting said upper and lower frame members and defining a forage passageway opening adapted to register with the discharge opening of a forage harvester forage pick-up means, and with the intake opening on a combine, horizontally disposed attachment rods on said upper and lower frame members for attachment to clevis elements on a forage harvester,

said adapter frame having a center opening registering with the intake opening on said combine and said discharge opening on said forage pick-up means.

4,267,688

MOWING DEVICE

Hermanus H. Vissers, and Gijsbert J. Mijnders, both of Nieuw-Vennep, Netherlands, assignors to Multinorm B.V., Nieuw-Vennep, Netherlands

Filed Oct. 24, 1979, Ser. No. 87,725

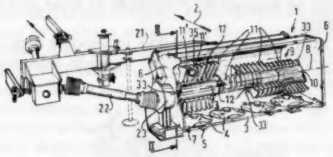
Claims priority, application Netherlands, Nov. 1, 1978, 7810873

Int. Cl.³ A01D *43/00*

U.S. Cl. 56—16.4 **11 Claims**

1. A mowing device comprising a frame, cutting means carried by said frame for cutting a crop close to the ground, at least one rotor journalled in the frame so as to be rotatable about a rotary axis disposed above the cutting means, said rotor comprising at least one carrier and at least one crop-engaging catch connected with the carrier so as to be freely pivotable at one end about a pivotal axis radially displaced from said rotary

axis, and means for rotating said rotor whereby said catch tends to align its center of gravity along a line containing said rotary and pivotal axes, said catch having an arcuate marginal



edge portion remote from said one end thereof and lying in a plane perpendicular to said pivotal axis, a substantial portion of the mass of said catch being concentrated along said marginal edge portion.

4,267,689

MAIZE CUTTER

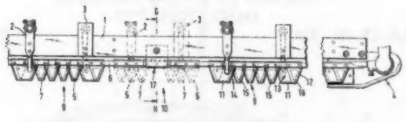
Rudolf Schneider, and Wilhelm Schefers, both of Remscheid, Fed. Rep. of Germany, assignors to Busatis-Werke KG, Remscheid, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,326

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1978, 2828766

Int. Cl.[3] A07D *45/02*

U.S. Cl. 56—53 14 Claims



1. In a maize cutter having several divider plates and at least one outside deflector for directing cornstalks into the maize cutter; and also having at least one of entry chains, entry bands and the like disposed between the divider plates and also between the divider plates and the outside deflector for holding the cornstalks fast and feeding the cornstalks to a cutting mechanism; an improvement comprising:

said cutting mechanism including double cutter means for cutting the cornstalks, said double cutter means including upper sets of cutter blades and co-acting associated lower sets of cutter blades;

each of said upper and associated lower cutter blades being arranged in a column;

said cutter blades in each set being spaced apart a selected distance;

said upper and associated lower sets of cutter blades being laterally spaced from each other to provide bladeless sections therebetween, said bladeless sections being wider than said selected distance between said cutter blades; and

said sets of cutter blades being disposed between the divider plates and also between the divider plates and the outside deflector, respectively, with said bladeless sections being disposed under the divider plates.

4,267,690

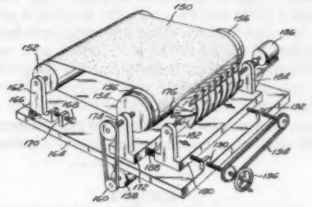
DISC REEL MOWER

Carl A. Pike, 13600 S. Praire Ave., Hawthorne, Calif. 90250, and J. Ellsworth Hixson, 1320 W. 16th St., Long Beach, Calif. 90813

Filed Apr. 14, 1980, Ser. No. 140,254

Int. Cl.[3] A01D *55/20*

U.S. Cl. 56—294 9 Claims



1. In a mowing machine of the construction which includes a bed knife and a generally cylindrical knife construction made up of a plurality of generally elliptical discs lying generally parallel to each other at an acute angle to the cylindrical axis and means for rotating the cylindrical knife construction such that the periphery of the discs form cutting edges coacting with the bed knife, the improvement:

wherein the discs which have major and minor axis include adjacent the peripheral end of the major axis thereof an ear extending away from the plane of the disc respectively in opposite directions from said plane, the ears being so constructed and configured as to present a cutting edge at an acute angle at the bed knife as the disc is rotated, as part of the cylindrical knife construction, adjacent the bed knife; and

comprising supporting fan structures extending outwardly generally along the major axes of the discs from proximate the axis of the cylindircal knife construction, said supporting fan structures being so constructed and configured as to support the discs against excessive flexing along the major axis thereof and lift and blow during the use of the machine for mowing, the discs comprising:

a central core section of unhardened metal, said central core section comprising at least two-thirds the thickness of the disc; and

hardened surfaces on each side of the central core section.

4,267,691

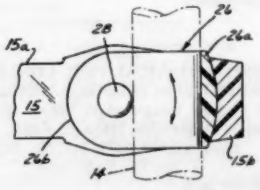
CHAIN HAVING PIVOT PINS ALSO PREVENTING DISASSEMBLY

Ralph R. Schoenick, Mequon, Wis., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Nov. 13, 1979, Ser. No. 93,573

Int. Cl.[3] F16G *13/06*

U.S. Cl. 59—85 2 Claims



1. In a chain wherein each chain joint includes the corre-

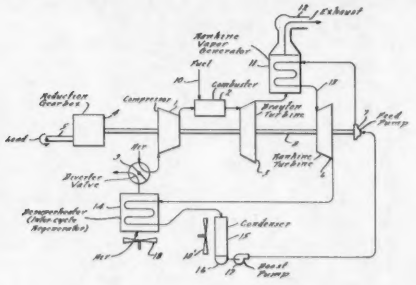
sponding spaced ends of two pin links, one end of a center link which is intermediate said pin link ends, and a T-headed connecting pin extending through said ends; said chain being of the type wherein the center link end includes spaced bars defining therebetween an elongated opening for the pin and wherein the pin is removable by a sequence of steps which includes first moving the pin laterally in said opening; the improvement wherein the center link is of a molded thermoplastic construction and is provided with a U-shaped bushing between the spaced bars and in which the pin is turnable, the two bars of the center link being molded with aligned studs which project toward each other and on which the bushing is pivotable, the distance between the ends of the opposing studs being less than the diameter of the pin (a) to such extent with regard to the stiffness of the bars that manually moving the pin deliberately between the studs is possible as in the intentional disassembly of the chain and (b) to such extent with regard to the stiffness of the bars that manually moving the pin unintentionally between the studs as in handling the chain is improbable.

4,267,692

COMBINED GAS TURBINE-RANKINE TURBINE POWER PLANT

Ernest R. Earnest, Hobe Sound, Fla., assignor to Hydragon Corporation, Lake Park, Fla.

Filed May 7, 1979, Ser. No. 36,516
Int. Cl.³ F02C 6/18
U.S. Cl. 60—39.18 R **24 Claims**



1. A powerplant having a combined gas turbine engine and Rankine turbine engine, said powerplant comprising

a gas turbine engine comprising a compressor, a gas turbine, and a burner and ambient air supply assembly for delivering air from the compressor and products of combustion from the burner to said gas turbine,

a closed loop Rankine turbine engine comprising a vapor generator, a Rankine turbine, a desuperheater, a condenser and a liquid feed pump, said vapor generator heated by the exhaust of said gas turbine and delivering heat to the Rankine fluid for powering said Rankine turbine,

means for directing air through said desuperheater and toward said compressor, and

valve means upstream of said compressor for selectively introducing said heated air from said desuperheater into said compressor.

4,267,693

HYDROMECHANICAL FUEL CONTROL WITH INDEPENDENT ELECTROMECHANICAL INTERFACE

Charles F. Stearns, Longmeadow, Mass., assignor to United Technologies Corporation, Hartford, Conn.

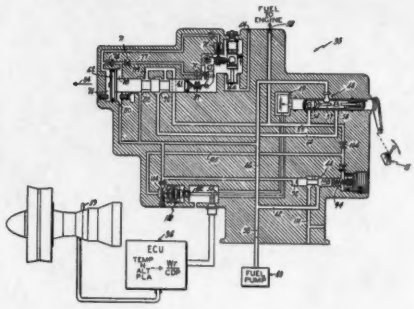
Filed Aug. 23, 1979, Ser. No. 69,139
Int. Cl.³ F02C 9/04
U.S. Cl. 60—39.28 R **1 Claim**

1. A fuel control system, comprising,

a fuel control circuit having a fuel input port for receiving fuel from a fuel supply line and a fuel output for supplying fuel to an output line, said circuit establishing fuel flow between said input and output,

a fuel pressure regulator for maintaining a preselected constant pressure on said supply line by reference to a fuel pressure reference, said reference being augmentable by applying an augmenting pressure to an input port on said regulator,

means for increasing said fuel flow in response to an electrical signal by augmenting said pressure reference, said means comprising,



an orifice having its input connected to said regulator input and its output connected to said control circuit output,

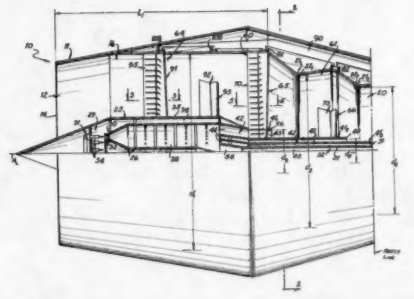
a valve controllable by a torque motor in response to said signal for supplying fluid from said fuel supply line to said orifice input, said flow raising the pressure between said control circuit output and said reference, and thereby raising the pressure between said control circuit input and outputs and increasing the fuel flow therebetween.

4,267,694

STAGED INDUCTION ENGINE

Thomas H. Sharpe, 502 Dorr Ave., Belvedere, S.C. 29841

Filed Oct. 10, 1979, Ser. No. 83,394
Int. Cl.³ F02K 7/10
U.S. Cl. 60—269 **8 Claims**



1. A staged induction engine comprising:

an air duct having a leading end and a trailing end and defining an air passage therethrough open to the atmosphere at the leading and trailing end of said duct so that air can flow through said passage from its leading end to its trailing end, said air passage including an inlet section adjacent its leading end of a first diameter, a nozzle section at its trailing end having a minimum second diameter smaller than said first diameter and a converging section connecting said inlet section and said nozzle section, said

converging section varying from said first diameter to said second diameter, said converging section defining a plurality of venturis therein axially spaced from each other along the length of said converging section, each of said venturis having a throat of a diameter smaller than the throat of the next upstream of said venturis;

a burner unit defining combustion chamber therein, a burner inlet thereto and a burner outlet therefrom; and

exhaust jet pumping means operatively associated with said burner outlet, said exhaust jet pumping means including a plurality of venturi jet pumping tubes corresponding in number to said venturis, each of said venturi jet pumping tubes defining an exhaust passage therethrough having an upstream exhaust inlet in communication with the burner outlet so that exhaust gases from said combustion chamber are forced therethrough, each of said exhaust passages having a downstream exhaust outlet from which the exhaust gases are discharged, one of said exhaust outlets being positioned upstream of the throat of each of said venturis so that the exhaust gases will be discharged through the throat of said venturi associated therewith to force air in the air passage through said air duct upstream of said venturi through said venturi under jet pumping action.

4,267,695

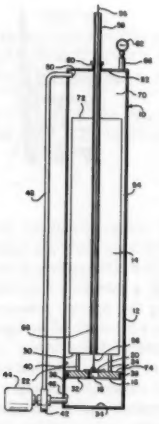
BUOYANCY ENERGY ENGINE

Peter Micciche, 614 Drexel Ave., Drexel Hill, Pa. 19026

Filed Sep. 27, 1979, Ser. No. 79,570

Int. Cl.³ F03C *1/00*

U.S. Cl. 60—473 **7 Claims**



1. In a buoyancy energy engine, the combination of

a vertical casing defining an interior piston space,

the casing having a top, a bottom and interconnecting sidewalls;

a buoyancy piston means reciprocal within the casing between an upper position and a lower position,

the buoyancy piston means comprising a piston and being buoyant in a circulating liquid,

the buoyancy piston means defining a clearance space for the circulating liquid between the piston and the casing sidewalls, top and bottom;

a sealing plate means affixed to the piston,

the sealing plate means comprising a peripheral seal, the seal being adapted for sliding, sealing engagement with the casing sidewalls to prevent liquid leakage thereabout as the piston is reciprocated, the sealing plate means being provided with an opening to permit liquid passage therethrough and a valve means to alternately close and expose the opening to control the passage of the liquid;

a circulating pump means to circulate the liquid about the piston,

the pump means drawing its suction from the casing below the sealing plate means and discharging into the casing above the sealing plate means; and

a work output shaft affixed to the buoyancy piston means and adapted to reciprocate as the piston is reciprocated,

the work output shaft being positioned partially within and partially without the casing.

4,267,696

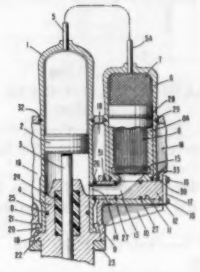
HOT GAS ENGINE

Per S. Lindskoug, Skanor, Sweden, assignor to Kommanditbolaget United Stirling AB & Co., Malmo, Sweden

Filed Feb. 14, 1979, Ser. No. 12,120

Int. Cl.³ F02G *1/04*

U.S. Cl. 60—526 **10 Claims**



1. A hot gas engine having a plurality of monoblock assemblies, each monoblock assembly including a cylinder, a heater pipe system and a regenerator-cooler housing, said monoblock assembly being detachably connected to a crankcase, the improvement in the monoblock assembly comprising:

transversely directed, coaxial bores formed in the regenerator-cooler housing and a cooler unit received therein,

a locking pin passing through said bores and locking the regenerator-cooler housing relative to said cooler unit, and

a cold gas connecting duct in said locking pin for providing communication between the cylinder and the regenerator-cooler housing.

4,267,697

HYDRAULIC MASTER CYLINDER

Harold Hodkinson, Coventry, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed Aug. 22, 1979, Ser. No. 68,536

Claims priority, application United Kingdom, Aug. 31, 1978, 35109/78

Int. Cl.³ B60T *11/28*; F15B *7/08*

U.S. Cl. 60—589 **7 Claims**

1. A hydraulic reservoir and master cylinder assembly having:

a master cylinder body;

a master cylinder bore with the body;

a piston slideable in the master cylinder bore:

an input rod for transmitting loads to the piston;

a blind bore defined in the piston, co-axial therewith for receiving the input rod;

a stepped bore in the piston, co-axial therewith;

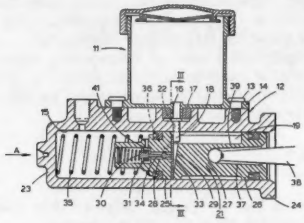
a breather valve located in the stepped bore;

an axial slot in the outer surface of the piston an which axially overlaps with but does not interconnect with the stepped bore;

an abutment projecting laterally into the master cylinder

bore and which is accommodated in said slot thus allowing the piston to slide axially;

and a lever pivoted to the piston and extending substantially diametrally thereof to be engaged with the abutment to operate the breather valve such that only a relatively short abutment and consequently shallow piston slot are required.



4,267,698

COOLING-AIR NOZZLE FOR USE IN A HEATED CHAMBER

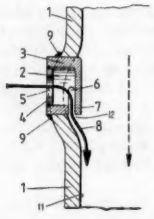
Max Hartmann, Baden, and Ferdinand Thuringer, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed May 1, 1979, Ser. No. 35,265

Claims priority, application Switzerland, Jun. 13, 1978, 6413/78

Int. Cl.[3] **F02C** *7/18*

U.S. Cl. 60—756 **7 Claims**



1. A cooling-air nozzle in combination with a heated chamber of the type comprising an enclosure wall having an internal surface to be cooled, said nozzle including a nozzle body having cooling air inlet means, and cooling air discharge means directed generally longitudinally relative to said wall, said internal surface including a depression, said nozzle body being located within said depression such that the innermost end thereof is substantially flush with said internal surface.

4,267,699

FREEZE ISOLATION SEAL

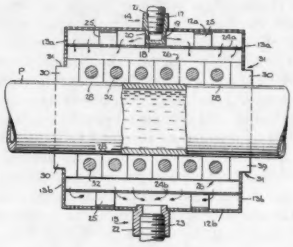
Harry H. Bahrenburg, 11 Sherman Ct., Bethpage, N.Y. 11714

Filed Feb. 21, 1979, Ser. No. 13,087

Int. Cl.[3] **F25C** *1/00*

U.S. Cl. 62—66 **25 Claims**

1. A device for freezing liquid in a conduit by the use of a cryogenic fluid comprising a clamp assembly sized for fitting closely about and gripping a conduit wherein liquid is to be frozen to support the conduit throughout the length of a conduit section wherein the liquid is to be frozen whereby deformation of the conduit under internal pressure is precluded, said clamp assembly also preventing direct contact between the conduit and the cryogenic fluid, and a housing adapted to surround the clamp assembly and to define a space between the clamp assembly and the housing for the flow of the cryogenic fluid, the housing having an inlet and an outlet for cryogenic fluid.



4,267,700

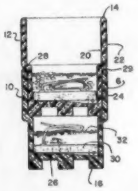
CONTAINER METHOD AND APPARATUS

Buryl Minter, P.O. Box 655, Chugiak, Ak. 99567

Filed Oct. 23, 1979, Ser. No. 88,192

Int. Cl.[3] **F25C** *1/18;* **F28C** *1/00;* **F25D** *3/08*

U.S. Cl. 62—70 **7 Claims**



1. The method of using containers for transporting and chilling materials comprising placing a manifold in a bottom of a container, placing ice in the bottom of the container and on the manifold, stacking a number of containers having manifolds and ice, shipping the stacked containers, unstacking the containers, connecting a pressurized air supply to a manifold in a bottom of a container, adding water and materials to be cooled, supplying air to the manifold and bubbling air through the water and ice and materials, placing a cover on the container and stacking another similar container on the cover.

4,267,701

HELIUM LIQUEFACTION PLANT

William M. Toscano, Sudbury, Mass., assignor to Helix Technology Corporation, Waltham, Mass.

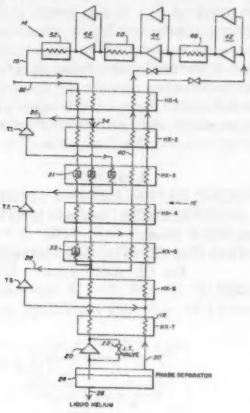
Filed Nov. 9, 1979, Ser. No. 92,232

Int. Cl.[3] **F25B** *9/00*

U.S. Cl. 62—86 **10 Claims**

1. In a liquefaction plant of the type in which gas in a high pressure line from a compressor section is precooled by gas in medium and low pressure lines and is liquified in a liquifying stage, some high pressure gas is expanded and returned to the compressor section through the medium pressure line, and gas

from the liquifying stage is returned to the compressor section through the low pressure line, the improvement of:



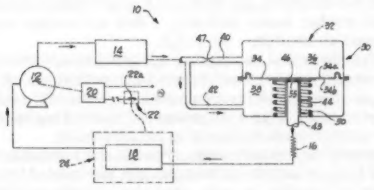
an expander between the medium and low pressure lines for further cooling a portion of the medium pressure gas.

4,267,702

REFRIGERATION SYSTEM WITH REFRIGERANT FLOW CONTROLLING VALVE

William J. Houk, Miami, Fla., assignor to Ranco Incorporated, Columbus, Ohio

Filed Aug. 13, 1979, Ser. No. 66,188
Int. Cl.³ F25B *1/00;* G05D *23/00*
U.S. Cl. 62—115 **12 Claims**



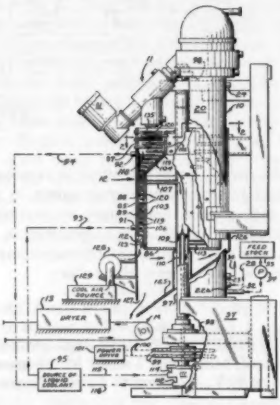
1. In a refrigeration system including a compressor, a refrigerant condensing heat exchanger, a refrigerant evaporating heat exchanger, a refrigerant expansion device for enabling condensed refrigerant to expand into said evaporating heat exchanger and a control device for cycling the compressor on and off according to a sensed condition, the improvement comprising: refrigerant flow controlling valve means for blocking flow of refrigerant between the refrigerant condensing heat exchanger and the refrigerant evaporating heat exchanger when the compressor is cycled off and for enabling refrigerant flow between the refrigerant condensing heat exchanger and the refrigerant evaporating heat exchanger when the compressor is cycled on, said valve means including a refrigerant pressure responsive member movable to condition said valve means to block refrigerant flow in response to changes in refrigerant pressure caused by the compressor cycling off and movable to condition the valve means to enable refrigerant flow in response to changes in refrigerant pressure caused by the compressor cycling on.

4,267,703

METHOD AND APPARATUS FOR MANUFACTURING CRYSTALLINE FOOD PRODUCTS

Bernard W. Minifie, Saltford, England, and Ted S. Czyzewski, Bloomingdale, Ill., assignors to Groen Division - Dover Corporation, Elk Grove Village, Ill.

Continuation of Ser. No. 770,269, Feb. 22, 1977, abandoned, which is a division of Ser. No. 660,846, Feb. 24, 1976, Pat. No. 4,086,371. This application Aug. 3, 1979, Ser. No. 63,551
Int. Cl.³ B01D *9/02*
U.S. Cl. 62—123 **33 Claims**



1. An apparatus for preparing a crystalline product from a liquid feed stock material comprising sugar, milk solids and a significant amount of moisture, said apparatus comprising in combination:

evaporator means comprising walls defining a substantially vertical passage for the flow of material to be condensed, an input at the bottom of said passage for said feed stock material, a first discharge at the top of said passage for the condensed material, and means to heat said walls above the vaporization temperature of said moisture;

crystallizer means comprising two walls defining a descending second passage having an input at the top and a discharge at the bottom, a first group of material engaging elements extending from one of said walls into the second passage, a second group of material engaging elements extending from the other of said walls into the second passage in juxtaposition to the first group, means for moving one of said groups of elements transversely to said second passage with respect to the other group of elements to knead material in the second passage; and

transfer means for moving condensed material from the discharge of the first passage to the input of the first passage.

4,267,704

TIMING CIRCUIT FOR AIR CONDITIONER CHILLER

Jack Yapp, 11338 Yearling, Cerritos, Calif. 90701

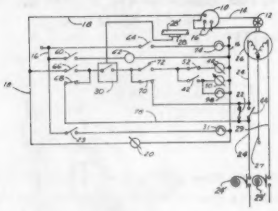
Filed Feb. 9, 1979, Ser. No. 10,891
Int. Cl.³ G05D *23/32;* F04B *49/00*
U.S. Cl. 62—158 **17 Claims**

1. A timing circuit for an air conditioner compressor for compressing a coolant to cool a recycling heat transfer fluid employing restriction means that governs the supply of coolant to said compressor by opening to increase coolant supply to said compressor and by closing to reduce coolant supply to said compressor comprising:

an initial timing means responsive to initial power loading of said compressor to arrest the operation of said restriction

means to limit coolant supply to said compressor to a minimum level during an initial timing interval,

a return sensor providing opposite signals above and below a setpoint temperature and arranged to monitor temperature of said recycling heat transfer fluid as it returns to thermal communication with said coolant, and



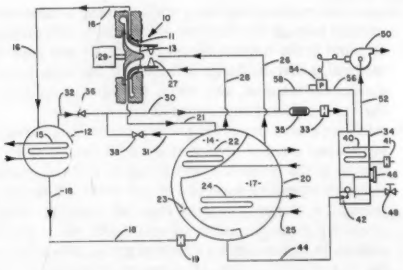
duty cycle timing means operative in response to signals from said return sensor corresponding to temperatures above said setpoint temperature to intermittently open said restriction means, and inoperative in response to signals from said return sensor corresponding to temperatures below said setpoint temperature.

4,267,705

REFRIGERATION PURGING SYSTEM

Gary S. Leonard, Minoa, and Thomas M. Zinsmeyer, Pennellville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Sep. 12, 1979, Ser. No. 74,693
Int. Cl.³ F25B *43/04*
U.S. Cl. 62—195 **2 Claims**



1. A purge system for use in removing non-condensible gases and other contaminants, such as water, from a refrigeration system of the type utilizing more than one condenser, each of which operates at a different pressure, comprising:

a purge chamber having a cooling coil located in the chamber to condense refrigerant vapor, means to return condensed refrigerant to the refrigeration system and means to remove condensed contaminants from the chamber,

a main purge line connected to the purge chamber to conduct refrigerant vapor, non-condensible gases and contaminants and including a pressure reducing device located in the line,

a series of secondary purge refrigerant lines arranged to connect said main purge refrigerant line to each condenser to provide vaporous mixture from the condenser to the main purge refrigerant line,

means located in each secondary purge refrigerant line to prevent vapor from flowing from one condenser to another condenser,

pump means connected to the purge chamber to remove non-condensible gases from the purge chamber,

a pressure differential measuring device connected by a first pressure sampling line to the purge chamber and by a second pressure sampling line to the main purge refrigerant line at a point ahead of the pressure reducing device,

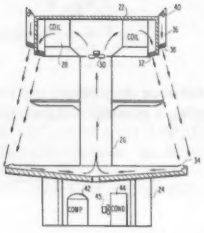
said pressure differential means being operatively connected to the pump means to activate the pump means when the pressure differential between the purge chamber and the main purge refrigerant line drops below a preset amount.

4,267,706

SHOP AROUND REFRIGERATED MERCHANDISER

Fayez F. Abraham, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Filed May 31, 1979, Ser. No. 44,021
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—256 **13 Claims**



1. A refrigerated display case comprising:

a cabinet having top and bottom sections and air conduit means coupling said top and bottom sections and said cabinet having an opening therein between said top and bottom sections, said opening circumscribing an angle of at least approximately 90°;

said conduit means having a vertically extending portion located approximately at the center of radius of said cabinet and extending into both said top and bottom sections, said conduit means including a first air conduit and a second air conduit;

said first air conduit passing through said conduit means and having at opposing ends thereof an air outlet opening and an air inlet opening, said air outlet opening and said air inlet opening being in alignment for establishing an inner air curtain across said opening in said cabinet;

said second air conduit passing through said conduit means and lying so as to be at least partially surrounded by said first air conduit in said vertically extending portion thereof and said second air conduit having at opposing ends thereof an air outlet opening and an air inlet opening lying outside of said air outlet and inlet openings of said first air conduit, said air outlet opening and said air inlet opening being in alignment for establishing a second air curtain across said opening in said cabinet, such second air curtain being directed along a path spaced outwardly of the inner air curtain;

first air band establishing means for circulating air through said first air conduit and forming an air band of refrigerated air within said display case, said first air establishing means including first air propelling means arranged within said first air conduit for propelling air through said first air conduit and refrigeration means for cooling air passing through said first air conduit and such cool air being expelled from said air outlet opening of said first air conduit and received by said inlet opening of said first air conduit so as to establish a band of refrigerated air with an inner air curtain across said opening in said cabinet;

second air band establishing means for establishing a band of non-refrigerated circulating air in said second air conduit

and including second air propelling means for propelling air through said second air conduit such that such air leaving said outlet opening of said second air conduit passes across said opening in said cabinet and is received by said inlet opening of said second air conduit, thereby establishing a secondary air band with the second air curtain across said opening in said cabinet; and

defrost means for deactivating said refrigeration means and causing ambient air to circulate through said first air conduit for defrosting said refrigeration means.

4,267,707

THERMAL RADIATION SHIELD

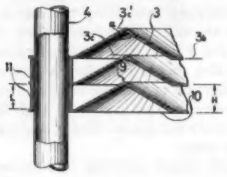
Johann Hemmerich, Jülich, Fed. Rep. of Germany, assignor to Kernforschungsanlage Jülich Gesellschaft mit beschräü äÄÉ üÖíÍ üö ü Ä üä

Filed Nov. 9, 1979, Ser. No. 92,660

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1979, 2907055

Int. Cl.³ F28F *1/30*

U.S. Cl. 62—514 R **9 Claims**



1. The combination of a cooled member of a cryogenic element with a thermal radiation shield, said shield comprising a plurality of spaced-apart stacked thermally conductive plates of annular configuration surrounding said member and having a continuous V-section extending in a toroidal pattern with a ridge of each plate extending into the V section of an overlying plate, said plates having aligned holes traversed by cooled tubes, and means for spacing said plates apart along said tubes.

4,267,708

CIRCULAR HOSIERY MACHINE AND THE LIKE, HAVING SIMPLIFIED PROGRAM CONTROL MEANS

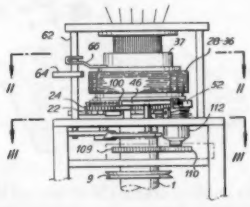
Giovanni Chietti, San Casciano Val di Pesa, Italy, assignor to Macchine Tessili Circolari MATEC S.p.A., Italy

Filed Dec. 14, 1978, Ser. No. 969.292

Claims priority, application Italy, Dec. 16, 1977, 9659 A/77

Int. Cl.³ D04B *15/94, 15/00*

U.S. Cl. 66—56 **4 Claims**



1. A circular knitting machine comprising a needle cylinder, means defining a control cam shell, means defining a program cam drum, said cam shell and program drum being co-axial with the needle cylinder, pawl means for advancing said drum, means for causing the drum to advance selectively through angular movements of short or long-pitch, said advancing means comprising means defining an array of seats on the drum, removable pin means located in selected ones of the seats, and control means cooperating with the pin means and operative to control the pawl means in dependence on the arrangment of the pin means so as to effect short or long-pitch advance of the drum, two ratchet wheels rotatable with the drum, one of said ratchet wheels having small-pitch teeth, and the other of said ratchet wheels having long-pitch teeth, said pawl means comprising first and second pawls each associated with a respective one of the two ratchet wheels, said control means being operative to actuate a selected one of the two pawls in accordance with the arrangement of the pin means, a manual control for actuating that one of the pawls which is associated with the ratchet wheel having long-pitch teeth to cause a rapid advancement of the drum to a zero-setting position, means for maintaining said advancement until said zero-setting position has been reached, a cam rotatable with the needle cylinder, means linking the cam to that one of the pawls which is associated with the ratchet wheel having long-pitch teeth such that the pawl is reciprocated by rotation of the cam, said linking means being rendered selectively operative and inoperative by the action of said control means and of said manual control, and means for changing the speed of needle cylinder rotation, such that during the long-pitch advancements of the drum, the cylinder rotates at a reduced speed.

4,267,709

TWIN-BEDDED WARP KNITTING MACHINE

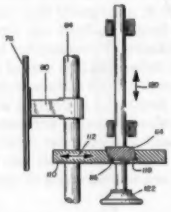
Gerhard Hittel, Rodgau, Fed. Rep. of Germany, assignor to Karl Mayer Textilmaschinenfabrik GmbH, Obertshausen, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 97,032

Claims priority, application Fed. Rep. of Germany, Dec. 1, 1978, 2851995

Int. Cl.³ D04B *23/02*

U.S. Cl. 66—87 **4 Claims**



1. A twin needle bed warp knitting machine comprising:

(a) a plurality of needle bars disposed parallel to each other having a plurality of needles affixed thereon forming a pair of needle beds, said needles traversing a path from the knock-over to the lapping position which increases their separation in a direction perpendicular to said needle beds;

(b) a plurality of commonly swingable guidebars including a plurality of guides affixed thereon, said guides having flat end portions disposed parallel to the swing plane of said guides, at least one of said guidebars forming stitches on both needle beds and at least one of said guide bars performing an underlap displacement movement, said guidebars having a forward and reverse swinging movement corresponding to a single work cycle of said needle bed;

(c) means for adjusting the separation between said needles on one of said pair of needle bars from the needles on the other of said pair of needle bars when said needles are in the knock-over position, said separation being smaller than the space required for an underlap displacement by one of said guides; and

(d) a pair of parallel trick plates having knock-over edges disposed between said pair of needle bars, each trick plate cooperating with one of said needle bars in the formation of stitches.

4,267,710
DOUBLE KNIT FABRIC WITH PATTERNED LOOP INTERLOCKING

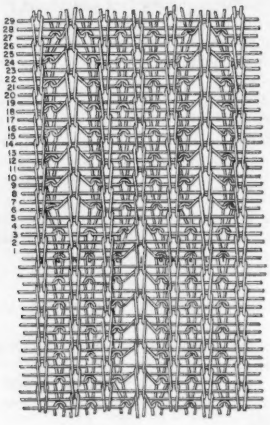
Yoshio Imamichi, Tondabayashi, Japan, assignor to Mizuno Sporting Goods Co., Ltd., Osaka, Japan

Filed Oct. 14, 1977, Ser. No. 842,169

Claims priority, application Japan, Oct. 18, 1976, 51/140375[U]

Int. Cl.³ D04B *7/04*

U.S. Cl. 66—196 **1 Claim**



1. A double knit fabric having a front surface comprising courses of plain knit stitches formed from a synthetic fiber yarn such as polyester and a rear surface comprising courses of plain knit stitches formed from a natural fiber yarn such as cotton, or a blended yarn wherein each of the front and rear surface courses are interlocked with one another by the engagement of a plurality of loops between a first pair of rear surface wales to a first series of loops of a front surface wale with this interlocking occurring for a first series of courses with a plurality of non interlocked rear wales occurring between adjacent first wale pairs and wherein said wale pairs are separated by an interlocking of the loops of a second rear wale pair to a second series of front surface loops in a second series of courses adjacent to said first course series.

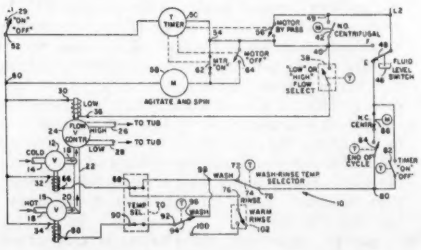
4,267,711
CONTROL SYSTEM FOR LAUNDRY APPLIANCE

Lawrence A. Kolze, Bensenville, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 15, 1979, Ser. No. 84,958

Int. Cl.³ D06F *33/02*

U.S. Cl. 68—12 R **7 Claims**



1. A control system for a laundry appliance of the type having a receptacle filled with washing fluid and the articles to be laundered are agitated in the fluid by a motor, said control system comprising:

(a) headsensor means operable in response to the fluid level in said receptacle to make and break an electrical circuit when said fluid level is greater than or less than a predetermined value;

(b) circuit means operable in response to said headsensor means to energize the machine motor from a source of power;

(c) timing means adapted for connection to a source of power and operable in response to energization of said motor means to provide a plurality of outputs at predetermined time intervals;

(d) fill valve means having a first input adapted for connection to a source of heated washing fluid and a second input adapted for connection to a source of unheated washing fluid and operable in response to making of said headsensor circuit to provide a selected mixture of said heated and unheated washing fluid;

(e) flow control valve means having the input thereof connected to receive the flow of washing fluid mixture from said fill valve means, said flow control valve means being operable in a first state to provide a first, or low, rate of flow therethrough and being operable in a second state to provide a second, substantially higher, rate of flow therethrough for filling said washing receptacle, said flow control valve means including actuator means operable upon connection to a source of power to change said flow control valve means from said high-flow state to said low-flow state and means biasing said valve means to said high-flow state;

(f) low-switch means operable in response to one of said timing means out puts to connect said flow control valve actuator means to a source of power for changing said flow control valve means to said low-flow state; and,

(g) duty cycle switch means operable in response to a second output of said timing means to intermittently interrupt said connection of said fill valve means to said source of power thereby intermittently stopping flow of said washing fluid.

4,267,712
PATTERN-CREATING DEVICE FOR ADVANCING TEXTILE OR SIMILAR WEBS

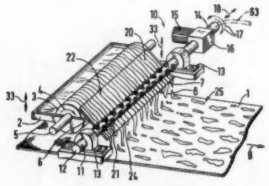
Heinz Grüber, Tönisvorst, Fed. Rep. of Germany, assignor to Eduard Küsters, Krefeld, Fed. Rep. of Germany

Filed Feb. 20, 1980, Ser. No. 122,861

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1979, 2938494

Int. Cl.³ D06B *1/06*

U.S. Cl. 68—205 R **10 Claims**



1. In a pattern creating device for advancing textile or similar webs, in which a pattern creating liquid is present, prior to being applied to the web, in the form of a film which extends over the entire width of the web and flows onto the web over a run-off surface inclined at an angle, and drops from the lower edge of the run-off surface freely onto the web, said device having a rotatable tube which extends along the run-off surface parallel and spaced therefrom and supported for movement back and forth in its longitudinal direction, said tube containing a plurality of pattern creating elements which are distributed over its surface and are adapted to make the film, which flows

down over the run-off surface, nonuniform at certain points, the improvement comprising:

(a) the plurality of pattern creating elements being a plurality of soft resilient wiper elements which are attached to the circumference of the tube and occupy only a fraction of the dimension of the tube in the longitudinal and circumferential direction thereof; and

(b) said tube supported adjacent said run-off surface such that said elements engage the run-off surface in the interior thereof at a distance from the lower edge of said surface.

4,267,713

MACHINE FOR DEPILATING THE SKINS OF SLAUGHTERED ANIMALS

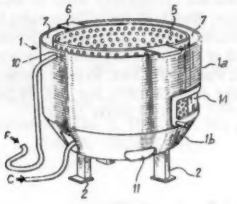
Claude Tournier, Lioujas, 12000 Rodez, France

Filed Dec. 4, 1979, Ser. No. 100,226

Claims priority, application France, Dec. 4, 1978, 78 34721

Int. Cl.[3] **C14B** *15/00;* **C14C** *1/00*

U.S. Cl. 69—24 **11 Claims**



1. Machine for removing the hair from animal hide, comprising an upwardly open vat and a horizontal perforated plate arranged in the lower part of the vat and rotationally driven on a central pivot by suitable means, said plate being provided on its surface in contact with the material to be treated with sharp edges formed on the contour of said perforations, and bounded peripherally by a fixed perforated cylinder, defining with the inner wall of the vat a coronary space ensuring the removal of the hair stripped off and projected by centrifugal force into the openings of said cylinder.

4,267,714

HYDRAULIC DEVICE FOR PRODUCING A TO-AND-FRO MOVEMENT

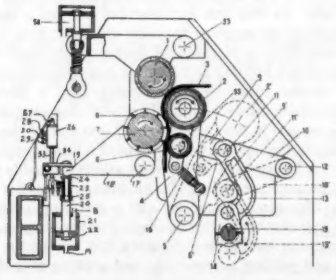
Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy

Filed Jul. 7, 1978, Ser. No. 922,842

Claims priority, application Italy, Sep. 15, 1977, 27585 A/77

Int. Cl.[2] **C14B** *1/06*

U.S. Cl. 69—32 **7 Claims**



1. A hydraulic device for producing a to-and-fro movement of a first member, the device comprising a double-acting piston-cylinder unit to which the first member is connected, a pressure fluid distributor including a control member for alternately feeding pressure fluid to one side or to the other side of the piston in the piston/cylinder unit to move the first member alternately in opposite directions, and a hydraulically actuable control device for controlling the distributor, the control device including a cylinder, a reciprocable piston member movable in the cylinder and a motion transmitting member, the piston member having a central large diameter section between two reduced diameter sections, and the motion transmitting member being in contact with the surface of the piston member so as to move transversely of the cylinder first in one direction and then in the opposite direction when the piston member moves relative to the motion transmitting member between two end positions, the motion transmitting member also being in contact with the control member of the distributor to transmit motion thereto, the control device also including an independently actuable single-acting piston movable into a position where it holds the piston member with its large diameter section registering with the motion transmitting member.

4,267,715

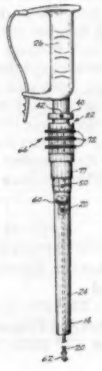
SKI EQUIPMENT LOCK

Edward C. Aylesworth, 33511 Pacific Hwy. S., Federal Way, Wash. 98003

Filed Jul. 6, 1979, Ser. No. 55,180

Int. Cl.[3] **E05B** *73/00, 37/02*

U.S. Cl. 70—58 **18 Claims**



1. A security line shackle integratable into a ski pole shaft below the handle, comprising:

first and second parts, each including an end portion connectable to a section of a ski pole shaft, and each including a jaw member which projects laterally outwardly beyond a side boundry of the ski pole shaft;

means connecting said first and second parts together for limited telescopic movement, between an open position in which the two jaw members of the two parts are spaced apart axially a distance greater than the diameter of a security line and a closed position in which the two jaw members are positioned relatively close together;

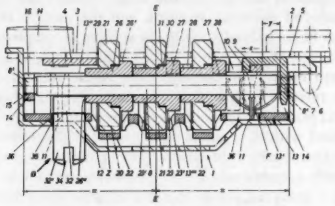
at least one of the jaw members including a chordwise groove in the side thereof which faces towards the other jaw member, said groove being sized to receive a portion of a security line; and

lock means carried by one of said parts operable to lock the two parts together in said closed position.

4,267,716
COMBINATION LOCK FOR BAGGAGE

Peter Milles, Alberthofen, Fed. Rep. of Germany, assignor to S. Franzen Sohne (GmbH & Co.), Fed. Rep. of Germany

Filed Jul. 5, 1979, Ser. No. 55,067
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1978, 2828859; Jul. 8, 1978, 2830091; Jul. 8, 1978, 2830092
Int. Cl.[3] E05B *37/02, 65/52*
U.S. Cl. 70—70 6 Claims

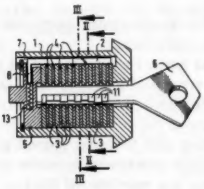


1. A combination lock for baggage, the lock having a housing containing a spindle which carries individual rotatable blocking sleeves, the sleeves being capable of being uncoupled against spring action by hand-actuated axial displacement from respective number selection discs for resetting the opening combination and having keyways which, when the opening combination is set, are in alignment with, and can receive projections on, a longitudinally slidable locking bolt positioned behind a front plate of the lock; and spring tongues bearing against the peripheries of the number selection discs and arranged to engage in catch recesses in the peripheries to locate the number selection discs in angular positions corresponding to selected numbers and to limit the rotation of the number selection discs in one direction in datum positions, characterized in that the spring tongues are formed integrally with a box-like insert in the lock housing, characterized in that the lock housing insert is formed symmetrically on each side of its transverse central plane, both end walls of the insert having similar bearings for receiving the ends of the spindle with a snap action and both regions of a bottom of the insert adjacent to the end walls having openings for the optional passage of a hand actuator for the displacement of the block sleeves relatively to the number selection discs.

4,267,717
DISC CYLINDER LOCK

Kaarlo Martikainen, Joensuu, Finland, assignor to Oy Wartsila Ab, Helsinki, Finland

Filed Nov. 14, 1979, Ser. No. 94,105
Claims priority, application Finland, Nov. 17, 1979, 783510
Int. Cl.[3] E05B *29/02*
U.S. Cl. 70—366 6 Claims

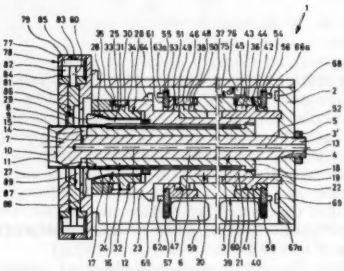


1. A cylinder lock comprising a fixed, hollow cylinder housing and therein a plurality of tumbler discs turnable by means of the key of the lock, each tumbler disc having a peripheral recess, a locking bar axially disposed in said lock and being guided by said locking discs in a radial direction of the lock, said locking bar being movable between an outer, locking position and an inner, releasing position, and further, a turnable force-transmission member non-turnably connected to said locking bar, wherein the improvement consists in the combination, that between said locking discs, there are, in a manner known per se, spacer discs provided with a peripheral recess at the position of said locking bar, said peripheral recess being formed to give said locking bar lateral guidance when it is moved between said two positions, that said locking discs as well as said spacer discs are turnably guided and radially supported directly by the internal surface of said cylinder housing, and that said locking discs, said spacer discs and said locking bar have guiding surfaces acting in a tangential direction of the lock, said guiding surfaces providing a tangential locking of said spacer discs relative to said locking bar in all functional positions of the lock as well as fixed limits for the movability range of said locking discs relative to said locking bar and means for obtaining a force transmission from said locking discs to said locking bar at the limits of said movability range.

4,267,718
APPARATUS FOR PRODUCING A TUBE WITH SUCCESSIVE CORRUGATIONS OF DIFFERENT RADIAL EXTENSIONS AND SPACINGS

Hubertus Benteler, Bielefeld; Egon Olszewski; Rainer Hansen, both of Paderborn-Elsen, and Ferdinand Wecker, Paderborn-Sennelager, all of Fed. Rep. of Germany, assignors to Benteler-Werke AG, Paderborn, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,213
Int. Cl.[3] B21D *15/06*
U.S. Cl. 72—59 8 Claims



1. Apparatus for producing a tube with successive corrugations of different radial extensions and spacings from a tubular blank of constant diameter, comprising support means; a central pin having an elongated shaft portion fixedly attached only at one end to said support means and having a radially enlarged head portion at the other end; a tubular member mounted on said shaft portion of said central pin for moving in axial direction and adapted to support together with said head portion a tubular blank at the inner surface thereof, said tubular member having one end axially spaced from said head portion to form between said one end and said head portion and a blank supported thereon an annular expansion chamber; first clamping means comprising a plurality of hydraulically operated and radially movable holding and forming jaws opposite said head portion; second clamping means comprising a plurality of circumferentially displaced radially tiltable clamping fingers of a collet arranged in the region of said one end of the tubular member about the outer circumference of a blank supported by the latter; a hydraulically operated axially movable annular clamping piston surrounding said clamping fingers for moving the latter between a clamping and a releasing position; an upsetting cylinder connected at one end to the other end of the tubular member and having opposite said one end a radially enlarged end portion surrounding and guiding said clamping piston for movement in axial direction; an axially movable corrugation cylinder surrounding part of said upsetting cylinder and being formed with an annular groove; a pair of annular

discs respectively mounted on opposite ends of said corrugation cylinder turnable about the axis of the latter but axially immovable thereto and each provided with axially extending projections; a pair of abutments respectively provided on said radially enlarged end portion of said upsetting cylinder and on said support means and respectively located opposite said projections; an annular collar fixed to said upsetting cylinder and located in said annular groove of said corrugation cylinder and forming in said groove two chambers adapted to be alternatingly filled with pressure fluid so as to axially move said upsetting cylinder relative to said corrugation cylinder; means for turning said discs to align a respective projection with the corresponding abutment to limit axial movement of said upsetting cylinder; and means for feeding pressure fluid into said expansion chamber after axially spaced portions of the blank have been clamped against the head portion and said one end of the tubular member by said first and said second clamping means to expand a portion of the blank clamped between said first and said second clamping means.

4,267,719

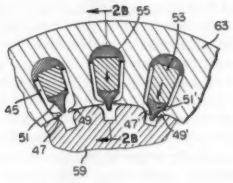
APPARATUS FOR ASSEMBLING DYNAMOELECTRIC MACHINE STATORS

Robert G. Walker, Ossian, Ind., assignor to Industra Products, Inc., Fort Wayne, Ind.

Division of Ser. No. 834,106, Sep. 19, 1977, Pat. No. 4,176,444. This application Jun. 1, 1979, Ser. No. 44,754

Int. Cl.[3] **H02K** *15/02*

U.S. Cl. 72—122 **3 Claims**



1. A device for deforming the tips of the teeth of a hollow cylindrical dynamoelectric machine stator core radially inward throughout the entire axial extent of the core to provide enhanced openings for the insertion of windings into that core comprising a stator bore support for engaging and supporting the stator core, a plurality of punches each disposable in a corresponding stator core slot, and means for forcing each punch toward a corresponding pair of stator tooth tips.

4,267,720

MILL FOR ROLLING METAL STRIPS

Vladimir N. Vydrin, ulitsa Timiryazeva, 28, kv. 27; Leonid M. Ageev, ulitsa Rossiiskaya, 200, kv. 28, and Anatoly P. Pelenen, ulitsa Degtyareva, 49a, kv. 48, all of Chelyabinsk, U.S.S.R.

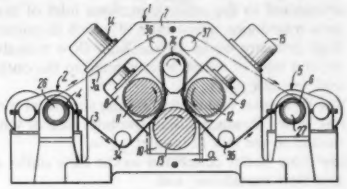
Division of Ser. No. 836,400, Sep. 26, 1977, abandoned. This application Nov. 9, 1979, Ser. No. 92,968

Claims priority, application U.S.S.R., Nov. 17, 1976, 2416651

Int. Cl.[3] **B21B** *39/08, 1/28*

U.S. Cl. 72—205 **9 Claims**

1. A mill for rolling metal strips, comprising: a stationary working stand having a housing; at least three work rolls mounted in said stand and cooperating successively through the strip being rolled, at least two of said rolls being secured in chocks placed in said housing of the working stand, the axis of a middle work roll being offset with respect to a plane passing through the axes of the extreme work rolls in the direction of entry of the strip being rolled into a first pair of said work rolls, defined by said middle work roll and a first extreme work roll along the path of rolling, and of exit of the strip from a second pair of work rolls, defined by said middle work roll and a second extreme work roll; drive means for rotating said work rolls in opposite directions at different peripheral speeds increasing along the path of rolling; a screw down for at least one of said work rolls; means for decoiling the strip; means for coiling the strip; and a deflecting roll mounted on said housing and arranged with respect to said middle work roll on the



opposite side of a plane passing through the axes of said extreme work rolls, the axis of said deflecting roll being in a plane passing through the axis of said middle work roll perpendicularly to the plane passing through the axes of said extreme work rolls.

4,267,721

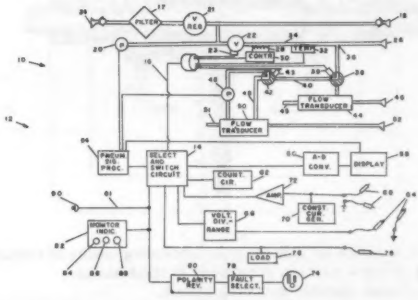
RESPIRATORY ANALYZER

Ned Longenecker, Lancaster; Clair M. Becker, Washington Boro; David P. Riegel, Landisville, and Alan G. Vogt, Jr., Lancaster, all of Pa., assignors to Timeter Instrument Corp., Lancaster, Pa.

Filed Nov. 9, 1979, Ser. No. 92,723

Int. Cl.[3] **G01L** *27/00*

U.S. Cl. 73—1 G **9 Claims**



1. An apparatus for multiple function calibration and testing of respiratory therapy equipment comprising:

a structural means;

an electronically operated digital display located on a surface of the structural means;

an analog to digital converter, the output of which is connected to the digital display;

a selecting and switching means which activates preselected valves and connects pre-selected transducers to the analog to digital converter upon operation of any of several switches, each switch controlling a particular calibration procedure;

a pneumatic signal processer, electrically connected to the selecting and switching means and to the digital display, capable of converting pressure information to electrical signals;

a high flow inlet mounted upon the structural means;

a high flow linear transducer the flow inlet side of which is connected to the high flow inlet;

a high flow outlet connected to the flow outlet side of high flow transducer;

a low pressure transducer the negative pressure side of which is connected to the low pressure output of the high flow transducer and the electrical output of which is connected to the pneumatic signal processor;

a first selector valve, connected to and controlled by the selecting and switching means, the outlet of which is connected to the positive pressure inlet of the low pressure transducer, a first inlet of which is connected to the high pressure outlet of the high flow transducer and a second inlet of which is connected to the outlet of a second selector valve;

a low flow inlet mounted upon the structural means;

a low flow transducer, the flow inlet side of which is connected to the low flow inlet;

a low flow outlet connected to the flow outlet side of the low flow transducer; and

a second selector valve, connected to and controlled by the selecting and switching means, the outlet of which is connected to the second input of the first selector valve, a first inlet of which is connected to the high pressure output of the low flow transducer.

4,267,722

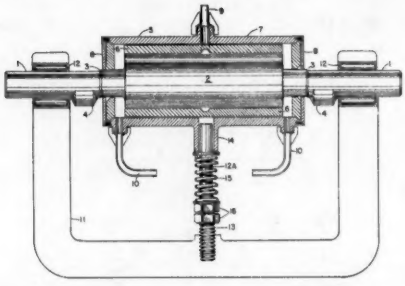
ADJUSTABLE LUBRICATION QUALITY INDICATOR-PROTECTOR FOR ENGINES AND OTHER MACHINES

Harold M. Hendry, 5107 S. Westshore Blvd., Tampa, Fla. 33611

Continuation-in-part of Ser. No. 912,999, Jun. 6, 1978, Pat. No. 4,169,368. This application Aug. 2, 1979, Ser. No. 63,084

Int. Cl.[3] **G01N** *19/00, 33/30*

U.S. Cl. 73—10 **14 Claims**



1. A device for indicating the lubricating quality of lubricating oil for a machine, comprising in combination:

a frame rotatably mounting a shaft;

said rotatable shaft having a journal for rotation with said shaft;

a housing having an internal cavity;

means for rotatably mounting said housing on said rotatable shaft with said journal disposed within said internal cavity of said housing;

a journal engaging member mounted in said internal cavity for engaging said journal;

means for establishing a normal force between said journal engaging member and said journal;

an oil inlet and an oil outlet communicating with said internal cavity in said housing;

means connecting said oil inlet and said oil outlet to the machine for circulating the lubricating oil between said housing and the machine;

said oil inlet and said oil outlet directing the lubricating oil between said journal and said journal engaging member;

means for retarding the rotation of said housing relative to said frame;

electric motor means for driving said rotatable shaft relative to said housing;

first means for indicating the electrical input to said electric motor to determine the quality of the lubricating oil from the electric motor torque required to rotate said shaft relative to said housing; and

second means for indicating the rotational position of said housing relative to said frame to provide a second determination of the quality of the lubricating oil from the torque transferred from said rotating shaft to said housing by friction between said journal and said journal engaging means.

4,267,723

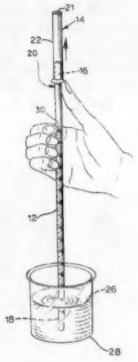
METHOD OF INTRODUCING A LIQUID INTO A MEASURING TUBE

John D. Mull, 1905 Fieldgate Dr., Burlington, Ontario, Canada (L7P 3H4)

Filed Jul. 19, 1979, Ser. No. 58,893

Int. Cl.[3] **G01N** *15/04, 33/48*

U.S. Cl. 73—61.4 **2 Claims**



1. A method of determining the erythrocyte sedimentation rate of a blood sample, comprising the following steps in sequence:

providing a device comprising: an elongate transparent tube which is open at both ends and which is marked with a series of graduations extending longitudinally of the tube; and a cap fitted to a first end portion of the tube and having a closed top and a skirt which depends from said top and makes airtight sealing engagement with the tube, the cap being slidable along the tube from a first position to a second position closer to the first end of the tube than said first position while maintaining said airtight sealing engagement;

arranging the cap at its first said position;

immersing a second end portion of the tube in the blood sample;

while maintaining said second end portion of the tube immersed in the blood sample, sliding the cap along the tube towards its said second position to an extent sufficient to cause blood to be drawn up the tube to an appropriate level determined by reference to said graduations;

removing the tube from the blood sample;

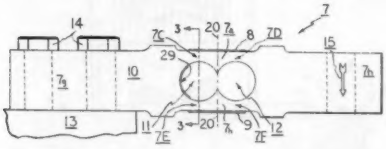
maintaining the tube in an upright position with the first end portion of the tube uppermost for a predetermined length of time; the lumen of the tube being dimensioned so that the column of blood is retained in the tube; and,

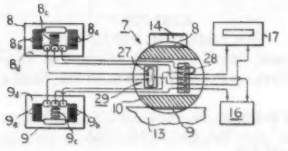
after said predetermined length of time, determining by reference to said graduations the extent to which erythrocytes in the blood have settled as an indication of the erythrocyte sedimentation rate of the blood sample.

4,267,724
STRAIN-GAGE TRANSDUCER BRIDGE GAGES WITH INTEGRAL CALIBRATION RESISTORS

Martin Spoor, Cambridge, Mass., assignor to Bofors America, Inc., Edison, N.J.

Filed Jan. 8, 1979, Ser. No. 1,607
Int. Cl.³ G01L *1/20*
U.S. Cl. 73—862.65 **8 Claims**





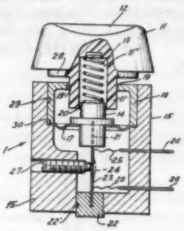
1. A strain-gage transducer bridge gage unit for a transducer having a sensing portion exhibiting surface strains in response to loading thereof, comprising a relatively thin broad-area insulating carrier having a thin metal layer thereon shaped to form both at least a pair of strain gages and a calibration resistor thereon which are integral with one another and with relatively large-area wiring tabs, active portions of said strain gages and said calibration resistor being spaced apart laterally along said carrier to occupy separate positions and to have predetermined orientations promoting response to surface strains and immunity from effects of surface strains, respectively, when said carrier is bonded with predetermined surfaces of a sensing portion of a transducer, said calibration resistor being directly connected integrally at one end with one of said tabs and at its other end with a junction of each of two of said strain gages, whereby said calibration resistor is disposed for electrical wiring externally of a strain gage bridge including said strain gages and calibrates external impedance characteristics of a bridge, said calibration resistor exhibiting resistance which does not vary significantly with temperature over an intended range of use.

4,267,725
ARRANGEMENT FOR REGISTERING LOADS

Jac M. Roth, and Veronika Roth nee Werner, both of Sandbuechel 26a, D-506 Bensberg-Refrath, Fed. Rep. of Germany

Filed May 22, 1979, Ser. No. 41,517
Int. Cl.³ G01L *1/22*; G01D *1/18*
U.S. Cl. 73—862.65 **8 Claims**

1. An arrangement for registering loads comprising an elongated transversely flexible element having two end portions and an intermediate portion therebetween; fastening means for rigidly fastening said end portions, said fastening means including a laterally immovable pressing nipple rigidly embracing one of said end portions; means for applying a compressive force lengthwise of said elongated element and towards the center thereof, said pressing nipple being operatively connected to said compressive force applying means; supporting means for supporting said pressing nipple adapted to permit the same to move longitudinally in the direction of elongation of said elongated element and to prevent any lateral movement of said pressing nipple in the direction transversal to said elongation; and operating means mounted on said elongated element and operative for generating a signal due to stressing of said operating means, whereby when the compressive force applied

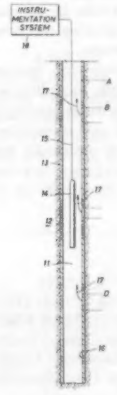


to said elongated elements exceeds a predetermined limit said intermediate portion flexes laterally so that said operating means are stressed and a signal corresponding to flexing of said intermediate portion is generated.

4,267,726
WELL PRESSURE TESTING METHOD

Simon P. Noïk, Verrieres le Buisson, France, assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Aug. 23, 1979, Ser. No. 69,220
Claims priority, application France, Aug. 30, 1978, 78 24998
Int. Cl.³ E21B *47/06*
U.S. Cl. 73—151 **9 Claims**



1. A well test method for determining a represenation of the pressures in a well at different selected levels of an interval having one or more production zones, comprising the following steps:

making pressure gradient measurements in the well along the interval of the well;

making at least one stationary meaurement of the local pressure in the well at a depth in the interval; and

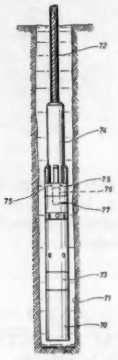
combining the pressure gradient measurements and the said at least one stationary local pressure measurement by integrating the variations of the pressure gradient measurements along the interval to obtain a first pressure-variation profile and shifting the first profile until the best coincidence is obtained with the at least one stationary local pressure measurement to determine the pressure profile of the well along the interval.

4,267,727

PRESSURE AND TEMPERATURE COMPENSATION MEANS FOR A DOWNHOLE FORCE MEASURING DEVICE

Joachim A. Hoppe, Spring, Tex., assignor to Schlumberger Technology Corporation, Houston, Tex.

Filed Sep. 21, 1979, Ser. No. 77,576
Int. Cl.[3] E21B 47/00
U.S. Cl. 73—151 5 Claims



1. In an apparatus for measuring the downhole force applied to a cable suspending a well-logging apparatus in a borehole, said apparatus including an elongated sensitive element adapted to be connected between the cable and the well-logging apparatus to deform elastically under the effect of the downhole tension and strain gauge means mounted on the sensitive element for measuring the downhole force, the improvement which comprises:

means for compensating for pressure and temperature changes in a borehole, including an elongated envelope having at least three sides, sealingly disposed about the strain gauge means and formed to allow said sides to deflect inwardly and outwardly from said strain gauge means in response to changes in pressure and temperature, said envelope being filled with an oil.

4,267,728

APPARATUS FOR ANALYZING THE FORCES ACTING ON A HUMAN FOOT

Michael T. Manley, Heath Cottage, Tarrylaw, Swaanswyk Rd., Tokai, and Edward G. Solomon, 5 Chester Ct., 202 High Level Rd., Sea Point, both of Cape Town, Cape Province, South Africa

Filed Jul. 2, 1979, Ser. No. 54,000
Claims priority, application United Kingdom, Jul. 4, 1978, 28740/78
Int. Cl.[3] A61B 5/10; G01M 19/00
U.S. Cl. 73—172 10 Claims

1. An apparatus for analyzing the forces acting on a foot comprising:

a platform composed of a plurality of transparent beams,

each end of each beam being associated with means for measuring a load imposed on that end of the beam by a subject walking across said platform;

a first television camera for providing a first video image of the gait of said subject;

a second television camera for providing a second video image of the plantar surface of the foot of said subject as viewed through said platform;

means for converting the output of said measuring means to a visual display signal representative of the force acting on the foot of a subject walking across said platform; and,

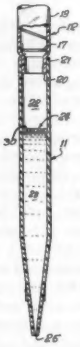
means for simultaneously displaying said first and second video images and said force representative visual display signal.

4,267,729

VOLUMETRIC PIPETTOR

Roy T. Eddelman, 60916 Terminal Annex, Los Angeles, Calif. 90054, and Gregory F. Moran, 225 E. El Sur, Monrovia, Calif. 91016

Filed May 14, 1979, Ser. No. 38,460
Int. Cl.[3] B01L 3/02
U.S. Cl. 73—425.4 P 5 Claims



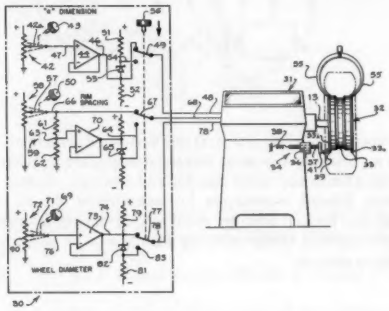
1. A tip for use on a volumetric pipettor having a bellows means, said tip comprising:

an upper chamber for attachment to the bellows means of the pipettor to which the chamber is to be attached in an airtight relationship therewith, said upper chamber being adjacent to a lower chamber terminating in a lower opening, said lower chamber having a predetermined volume defined and limited by a partition separating the upper chamber and lower chamber, said partition being sealingly positioned between the chambers and being permanently affixed to the intersection between the upper chamber and the lower chamber by a shoulder located within said tip, said partition being fabricated from a disc-shaped microporous layer readily permeable to gasses and essentially impermeable to liquids, whereby when said lower opening is immersed in a liquid and air is drawn inwardly from said upper chamber, the liquid will enter the lower chamber of the tip until the predetermined volume of liquid reaches the partition after which the lower opening may be removed from the liquid and the liquid ejected by moving air outwardly from the upper chamber and through the partition while retaining the partition in its position between the upper and lower chambers.

4,267,730
WHEEL BALANCING SYSTEM

Donald B. Curchod, Saratoga, and Hoyt H. Nelson, Santa Clara, both of Calif., assignors to Nortron Corporation, Sunnyvale, Calif.

Filed Sep. 5, 1978, Ser. No. 939,473
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **17 Claims**

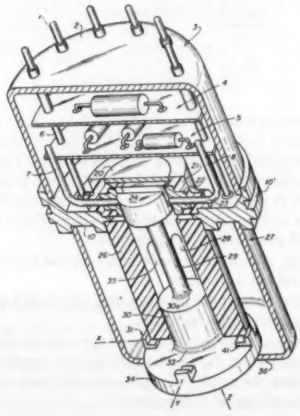


1. In a wheel balancing system for computing the amount of counterbalancing weight to be added in each of two spaced parallel planes taken through said weights and defined by rotation of said weights with a dynamically unbalanced wheel, variable means controllable by an operator for providing a first input signal substantially representative of the spacing between the rims of the wheel, means for adjusting the value of said first signal by a predetermined relationship to provide a second input signal substantially representative of a spacing between said planes different from the first named spacing, and means for selectively coupling said first or second input signals to said system for computing the value of weights to be added in the first or second named spaced parallel planes.

4,267,731
FORCE BALANCED VIBRATORY RATE SENSOR

Peter E. Jacobson, Phoenix, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,179
Int. Cl.³ G01C *19/56*
U.S. Cl. 73—505 **15 Claims**

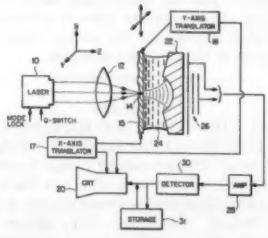


1. A force feed back inertial rate sensor comprising:
a first support member,
a second support member,
an elongate beam cantilevered from said second support member, extending along a sensing axis about which rate of turn is to be measured, and having a free end,
first signal generating means coupled with and responsive to vibration of said free end in a first plane including said sensing axis,
first elongate drive means cantilevered from said first support member and coupled with said second support member and responsive to said first signal generating means for vibrating said elongated beam in said first plane at a frequency dependent upon the natural vibration of said elongate beam,
second signal generating means coupled with and responsive to vibration components of said free end in a second plane including said sensing axis and normal to said first plane due to rate of turn of said support member about said sensing axis, and
second elongate drive means cantilevered from said first and coupled with said second support member and responsive to said second signal generating means for vibrating said elongated beam in said second plane in a phase and amplitude such as to reduce the signal from said second signal generating means to zero whereby the signal supplied to said second driver means is proportional to said rate of turn about said sensing axis.

4,267,732
ACOUSTIC MICROSCOPE AND METHOD

Calvin F. Quate, Stanford, Calif., assignor to Stanford University Board of Trustees, Stanford, Calif.

Filed Nov. 29, 1978, Ser. No. 964,613
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—606 **28 Claims**



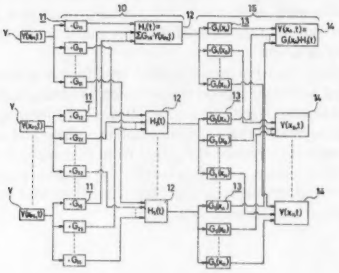
1. An acoustic microscope, comprising:
(a) means operatively connected to an object of interest for heating the object so that the object thermally expands and generates acoustic waves which are propagated therefrom;
(b) means focused for detecting only the acoustic waves generated and propagated from a microscopic portion of the object of interest, said detecting means being sensitive to acoustic waves having frequencies greater than about 100 MHz; and
(c) means connected to the object of interest and the detecting means for moving one of either the object of interest or the detecting means with respect to the other so that the object of interest is scanned in a raster pattern.

4,267,733

TORSIONAL VIBRATION MONITORING METHOD AND AN APPARATUS FOR PERFORMING THE SAME

Ichiji Shima; Tatsuo Yamamoto; Shigeru Yoshibayashi; Hiroshi Teshima, all of Amagasaki; Akio Hizume, Tokyo; Tetsuo Iki, Nagasaki; Takashi Yamamoto, Nishisonogi; Kyozo Kanamori, Isahaya; Kenzo Noguchi, and Shinobu Kishikawa, both of Nagasaki, all of Japan, assignors to The Kansai Electric Power Co. Inc., Osaka and Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, both of, Japan

Filed May 30, 1979, Ser. No. 43,679
Claims priority, application Japan, Jun. 1, 1978, 53-66143
Int. Cl.[3] G01H 1/10
U.S. Cl. 73—650 2 Claims



1. In an apparatus for monitoring torsional vibration in which a torsional vibration at an arbitrary position on a rotating shaft system is measured from a torsional vibration detected at a certain position on the rotating shaft system on the basis of the facts that a torsional vibration occurred in the rotating shaft system is a sum of modal vibrations and the modal vibration can be represented by a product of a vibration mode type and a vibration mode component, the improvement comprising n sets of detectors for detecting torsional vibrations at each of n certain positions on the rotating shaft system, a matrix arithmetic unit for multiplying previously obtained n sets of n constants to the n sets of torsional vibrations obtained by said detectors, respectively, and for adding the results of the multiplications to obtain n vibration mode components and a modal arithmetic unit for multiplying the n vibration mode components to vibration mode types at arbitrary position on the rotating shaft system and for adding them to obtain torsional vibrations at the arbitrary positions.

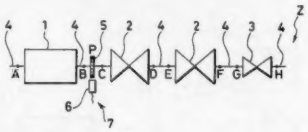
4,267,734

TORSIONAL VIBRATION MONITORING APPARATUS FOR ROTATING SHAFT SYSTEM

Ichiji Shima, 39-27 , Hukuyo-machi; Tatsuo Yamamoto; Shigeru Yoshibayashi; Hiroshi Teshima, all of c/o The Kansai Electric Power Co., Inc., Technical Research Center of 2, Ichinotsubo 1-chome, Nakoji, Amagasaki City, Hyogo Pref.; Akio Hizume, 8-11, Naka-machi 1-chome, Setagaya-ku, Tokyo; Tetsuo Iki, 1998-5, Yokoo-machi, Nagasaki City, Nagasaki Pref.; Takashi Yamamoto, 347, Motomurago, Tokitsu-cho, Nishisonogi-gun, Nagasaki Pref.; Kyozo Kanamori, 16-10, Shiraiwa-cho, Isahaya City, Nagasaki Pref.; Yoshiaki Mitsuyama, 145-4, Fukohori-machi 1-chome, Nagasaki City, Nagasaki Pref., and Shigeho Tanaka, 39-27 Hokuyo-machi,, Nagasaki Pref., all of Japan

Filed Sep. 12, 1979, Ser. No. 74,815
Claims priority, application Japan, Sep. 22, 1978, 53/117205
Int. Cl.[3] G01H 1/10; G06G 7/64
U.S. Cl. 73—650 3 Claims

1. A torsional vibration monitoring apparatus for a rotating shaft system comprising a detector disposed at a certain position of the rotating shaft system for detecting torsional vibration thereof, a memory device for storing the torsional vibration having a constant time duration which is detected by said detector as a time series data obtained by sampling the torsional vibration with minute sampling time, a Fourier transformer for transforming the time series data into a frequency series data, multipliers each for multiplying the frequency series data with a previously obtained relation between the



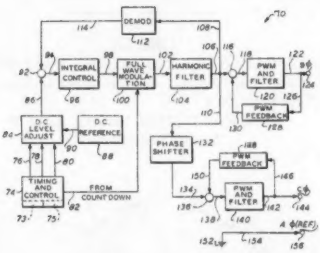
vibration of the shaft system at said certain position thereof and that at an arbitrary position thereof at respective frequencies to obtain a frequency series data for said arbitrary position and a reverse Fourier transformer for transforming the frequency series data for said arbitrary position to obtain a time series data of the torsional vibration of the shaft system at said arbitrary position thereof.

4,267,735

GYRO MOTOR CONTROL SYSTEM

Henry Valles, Rockaway; Allen R. Taylor, Nutley, and Thomas Beneventano, Washington Towship, Bergen County, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Jun. 25, 1979, Ser. No. 51,764
Int. Cl.[3] G01C 19/10
U.S. Cl. 74—5.7 8 Claims



1. In an instrument gyro system having a gyro wheel and a synchronous motor with solid rotor for driving the gyro wheel, the gyro system being characterized by a drift rate that remains uniform during a given synchronized period, and that is different in random manner for succeeding on-off gyro operations, the method of eliminating the error-effects of the aforesaid on-off gyro drift that comprises:

supplying a modulated voltage waveform having repetitive intervals to the motor,

supplying notch period pulses and run period pulses to the motor during the intervals,

supplying a notch voltage over a notch period and a run voltage over a run period during each repetitive interval,

controlling the notch voltage so as to be lower than the back EMF voltage of the motor,

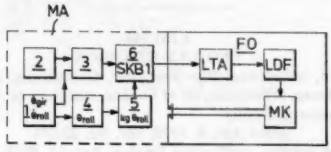
thereby causing a braking action on the rotor and a position slip of the rotor relative to its motor field during each interval.

4,267,736

DEVICE FOR TILTING THE BODY OF A HIGH-SPEED VEHICLE RELATIVE TO AN UNDERFRAME THEREOF

Gunnar A. E. G. Westbeck, Solna, Sweden, assignor to Westbeck Navitele AB, Stockholm, Sweden

Filed Feb. 9, 1977, Ser. No. 766,849
Claims priority, application Sweden, Feb. 9, 1976, 7601345
Int. Cl.[3] G01C *19/42*; B62D *37/00*
U.S. Cl. 74—5.22 10 Claims



1. Apparatus for controlling the tilt angle of a vehicle body in a roll direction relative to an underframe supporting the vehicle body, comprising

a speed detector arranged to sense the linear velocity (V) of the vehicle,

a gyro arrangement mounted on a part of the vehicle and arranged to sense the yaw angular velocity ($\dot{\theta}_{gir}$) and the roll angular velocity ($\dot{\theta}_{roll}$) at said vehicle part, and

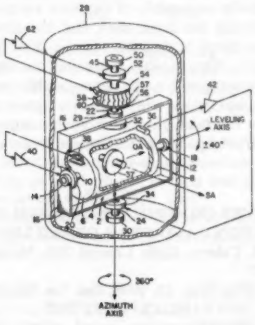
means responsive to the sensed V, $\dot{\theta}_{gir}$ and $\dot{\theta}_{roll}$ to adjust the tilt angle of the vehicle body so as to tend to reduce the value of $|m.V.\dot{\theta}_{gir}| - |k.g.\theta_{roll\ VB}|$, where $\theta_{roll\ VB}$ is the roll angle of the vehicle body relative to an external reference plane, g is the acceleration due to gravity and m and k are coefficients.

4,267,737

DUAL SUSPENSION GYROSCOPIC DEVICE HAVING POWERED GIMBAL SUPPORT

Bernard J. O'Connor, Eastchester, N.Y.; William H. Ficken, Berkeley Heights, N.J.; Tony R. Carnevale, Oradell, N.J., and Michael J. Lanni, Ridgewood, N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Dec. 4, 1978, Ser. No. 965,762
Int. Cl.[2] G01C *19/28, 19/30*
U.S. Cl. 74—5.47 14 Claims



1. A gyroscopic device comprising:

a gyroscope having at least a single degree of freedom and including a first case, a float and low torque means for supporting said float in said first case for relative motion between said float and said first case about a first axis;

a gimbal supporting said first case for relative motion of said gimbal and said first case about said first axis;

means responsive to relative motion between said first case and said float for caging said first case to said float;

a second case;

means supporting said gimbal in said second case for relative motion between said gimbal and said second case about a second axis;

means responsive to relative motion between said first case and said gimbal about said first axis for applying torque to said gimbal about said second axis to maintain the gyroscope spin axis in a reference plane;

sensing means mounted on said gimbal and providing data signals indicative of the displacement of said gimbal relative to said second case;

means mounted on said gimbal and rotatable relative thereto for transferring data signals from said gimbal mounted sensing means to points of utilization external to said second case;

means for sensing relative motion between said gimbal and said data transferring means; and

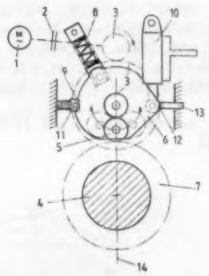
means responsive to said sensed relative motion between said gimbal and said data transferring means for rotating said data transferring means.

4,267,738

TURNING DEVICE ESPECIALLY FOR DRIVING A TURBINE SHAFT

Alfred Häusermann, Nussbaumen, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jan. 17, 1979, Ser. No. 4,185
Claims priority, application Switzerland, Feb. 21, 1978, 1841/78
Int. Cl.[3] F16H *57/10, 35/00*
U.S. Cl. 74—8 14 Claims



1. A turning device for driving a rotatable member especially a turbine shaft, comprising:

a cam member supporting a pinion gear, said cam member being mounted adjacent said rotatable member for swinging movement forward and backward relative to said rotatable member;

drive means for selectively driving said pinion gear;

first means for urging the pinion gear into operative engagement with the rotatable member by swinging said cam member to an intermediate position, said intermediate position being between extremes of said foreward and backward swinging movement of said cam member;

second means for releasably maintaining the pinion gear in said operative engagement with the rotatable member; and

third means for swinging said cam member out of said intermediate position upon a release of said second means.

4,267,739

PUSHBUTTON TUNER

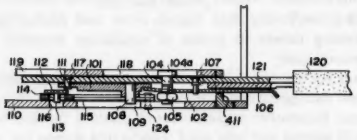
Yasuhisa Nishikawa, and Takao Kanai, both of 50, Kamitoda, Toda-shi, Saitama-ken, Japan

Filed Dec. 18, 1978, Ser. No. 970,329

Claims priority, application Japan, Dec. 19, 1977, 52-169590[U]; Dec. 19, 1977, 52-169591[U]; Dec. 22, 1977, 52-171829[U]; Dec. 22, 1977, 52-171830[U]; Dec. 22, 1977, 52-171831[U]

Int. Cl.[3] **H03J** *1/08, 5/12*

U.S. Cl. 74—10.33 **6 Claims**



1. A pushbutton tuner comprising:

a base plate;

a button slide mechanism including

a plurality of button slide assemblies disposed in parallel with the base plate,

each of said button slide assemblies being comprised of a button slide, a frequency control member, a locking member to lock the frequency control member in a given position, a pin provided on the frequency control member for station selection operation, a threaded shaft, a nut in mesh with the threaded shaft to hold the locking member intermediate thereof; and

an upper plate for covering said button slide mechanism; said button slide mechanism being mounted directly on said base.

4,267,740

SHAFT-TURNING DEVICE

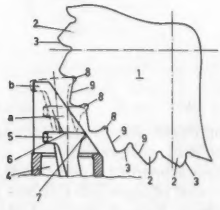
Hans Schwarz, Umiken, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Aug. 27, 1979, Ser. No. 70,106

Claims priority, application Switzerland, Sep. 14, 1978, 9625/78

Int. Cl.[3] **F16H** *27/02, 31/00*

U.S. Cl. 74—128 **3 Claims**



1. Apparatus for rotating a shaft, comprising:

a ratched wheel on said shaft, said ratchet wheel having a plurality of teeth said teeth having a substantially straight and flat segment intersecting a bearing surface at the top of the teeth and having a base portion which includes a recess having a rounded V shape between said flat segment and said bearing surface, said bearing surface having a convex curvature extending from said top portion to said base portion;

a pawl having a contact surface for engagement with said teeth, said contact surface having a substantially straight flat portion merging into a convex portion, said pawl contact surface also having a projection in the shape of a wedge with a rounded point; and

means for intermittently engaging the pawl with each of the teeth of the ratchet wheel, said pawl being positioned for engagement of said pawl contact surface with said teeth bearing surface for turning said shaft and for engagement of said pawl projection with said teeth straight segment as the shaft turns, said pawl and teeth surfaces cooperating to roll off in normal operations and to slide off harmlessly upon insufficient teeth engagement by the pawl.

4,267,741

VEHICLE GEARBOX

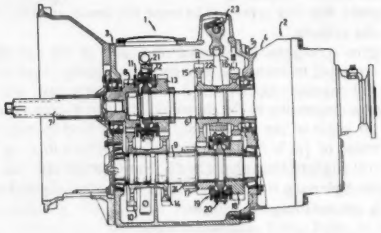
Stig Jarl, Mölnlycke; Per-Olof Eker, Gothenburg, and Peter Davidsson, Mölnlycke, all of Sweden, assignors to AB Volvo, Gothenburg, Sweden

Filed Apr. 4, 1979, Ser. No. 27,091

Claims priority, application Sweden, Apr. 11, 1978, 7804070

Int. Cl.[3] **F16H** *3/20, 3/08, 3/02*

U.S. Cl. 74—339 **4 Claims**



1. Gearbox for motor vehicles comprising an input shaft with an input gear; a countershaft with a drive gear for the countershaft, said driving gear engaging the input gear; a transmission main shaft with a number of gears depending on the number of gear ratios, each of said gears being in driving engagement with an individual gear on the countershaft; a reverse shaft with a driving gear for the reverse shaft, said driving gear engaging a gear on the countershaft; and a reverse gear engaging a gear on the main shaft, the gears on the main shaft and associated gears on the countershaft and reverse shaft being selectively engagable to establish various driving connections between the input shaft and the transmission main shaft, characterized in that the reverse shaft has at least one additional gear disengagably journalled on the reverse shaft and which gear engages a gear disengagably journalled on the countershaft; and in that one of the other gears on the countershaft engages the main shaft gear which engages the reverse gear and is disengagably journalled on the countershaft.

4,267,742

SINGLE LEVER CONTROL MECHANISM FOR BICYCLE FRONT AND REAR DERAILLEURS

Maximino R. Cabeza, Calle Central 709, Miramar, Santurce, P.R. 00907

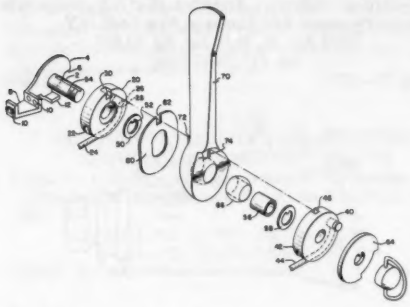
Filed Nov. 22, 1978, Ser. No. 963,099

Int. Cl.[3] **G05G** *9/02*

U.S. Cl. 74—471 XY **5 Claims**

1. Mechanisms for operating the gear shift and central shifter of a multi-speed bicycle, comprising a shaft fixed to the frame of the bicycle, a ring surrounding the shaft and having a convex spherical external surface, two spaced, parallel disks mounted on the shaft at the ends of the ring for limited rotational movement about the shaft, a cable connected to each disk and being respectively operatively connected to the gear shift and central shifter, each of the facing surfaces of the disks having therein at its periphery a notch, a lever having an inner end with a concave spherical surface mounted on the spherical

surface of the ring for limited rotational movement about the shaft and for sideways rocking movement toward and away



from each disk, and a tooth on each side of the lever positioned to be received in the notch in each of the disks.

4,267,743

TRANSMISSION CONTROL DEVICE

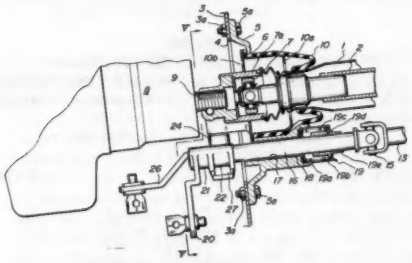
Yoshiyuki Tanaka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 25, 1979, Ser. No. 60,674

Claims priority, application Japan, Nov. 22, 1978, 53-143264

Int. Cl.³ G05G *9/16*

U.S. Cl. 74—473 SW **5 Claims**



1. A transmission control device comprising in combination,
an upper control rod driven to shift and to rotate by a change lever, and being supported at the upper end of said upper control rod by a support bracket mounted by a steering column housing a steering shaft,
a lower control rod supported slidably and freely rotatably by a mount bracket secured on a dash panel and having an end projecting in an engine room side and coupled to a transmission device via a linkage, and
a tilt joint for coupling the lower end of the upper control rod and the cabin side end of the lower control rod.

4,267,744

BICYCLE SPEED CHANGE LEVER

Kazuto Yamasaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

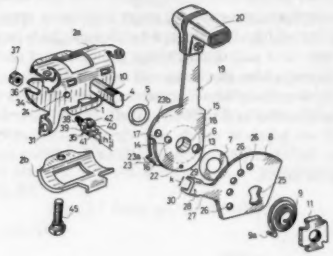
Filed Mar. 5, 1979, Ser. No. 17,740

Claims priority, application Japan, Mar. 3, 1978, 53/24844

Int. Cl.³ G05G *5/06*; B62K *23/06*

U.S. Cl. 74—475 **10 Claims**

1. A bicycle speed change lever comprising:
a lever body pivotally mounted at its base portion on a support shaft,
a click plate mounted on said support shaft and slightly spaced apart from said lever body, in such a manner that it is resiliently urged toward said base portion and is slightly movable about said support shaft in opposite directions for presenting alternative of two different positional phases,
one of said two positional phases being that the click plate is in such a position as slightly turned upwardly,
the other of said two positional phases being that the click plate is in such a position as slightly turned downwardly,
at least one concave portion formed in said base portion for retaining a ball therein,
a plurality of ball receiving means formed in said click plate,



said plurality of ball receiving means being aligned in an arc of a circle in spaced-apart relation with each other,
said ball being interposed between said base portion and said click plate so as to be engageable with and disengageable from a selected one of said plurality of ball receiving means, and
a phase converting mechanism for converting said positional phases of the click plate from one to the other and vise versa only when directions of pivotal movement of said lever body is changed.

4,267,745

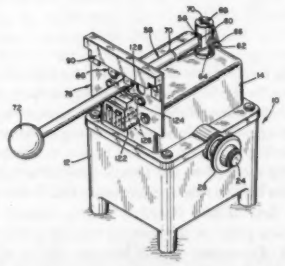
SHIFT CONTROL FOR TRANSMISSION

Douglas F. Edwards, Mount Vernon, Ohio, assignor to The J. B. Foote Foundry Co., Fredericktown, Ohio

Filed Oct. 25, 1979, Ser. No. 87,829

Int. Cl.³ G05G *5/02*

U.S. Cl. 74—476 **10 Claims**



1. In a transmission having an output shaft, a first gear rotatably mounted on said shaft, a second gear rotatably mounted on said shaft, a shift dog mounted on said shaft for rotation therewith and for slidable movement with respect thereto, said shift dog having a first position engageable with said first gear, a second position engageable with said second gear, and a third, neutral position therebetween in which said shift dog is disengaged from both gears, a shifter fork engaged with said shift dog for moving said shift dog among its three positions, said shifter fork having a shaft extending away from said shift dog, a shift lever connected to said shaft and movable among

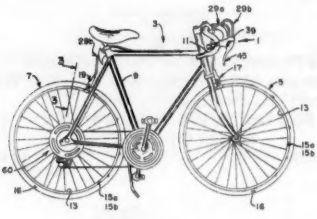
three positions to correspondingly move said shift dog among its three positions by said shifter fork, a lockout plate having an opening including an elongate slot with three notches along one side corresponding to the three positions of said shift lever, with a central one of the three notches corresponding to the neutral position of said shift dog and the outer notches corresponding to the two engaged positions of said shift dog, said shift lever extending through said opening, a guide located adjacent said elongate slot, a lockout slider having a portion guided in said guide for movement parallel to said slot and having two projections in alignment with said elongate slot, said projections being spaced apart a distance approximately equal to the width of the central notch, said guide having stops engageable with said slider to limit movement of said slider so that said projections can be moved in each direction along said slot a distance only about equal to the width of one of the notches, whereby said shift lever can only be moved from one notch to an adjacent notch at a time and cannot be moved between the outer two notches without first being moved into the central notch.

4,267,746

SINGLE HAND-OPERATED DUAL BRAKE ACTUATOR

Earl M. Pruett, 4725 Vienna, St. Louis, Mo. 63109

Filed May 3, 1979, Ser. No. 35,737
Int. Cl.[3] G05G *9/00*; B62L *3/02*
U.S. Cl. 74—489 **8 Claims**



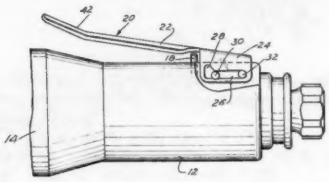
1. A single hand-operated actuator for a pair of caliper-type bicycle brakes or the like, each of said brakes being actuated by a respective Bowden sliding element linkage, each of said Bowden sliding element linkages including an outer sheath and an inner sliding member, said actuator comprising a base adapted to be secured to the handle bars of a bicycle, a first reaction point on the base for receiving and holding the outer sheath of a first of said Bowden sliding element linkages, a second reaction point on the base for receiving and holding the outer sheath of a second of said Bowden sliding element linkages, a handle pivotally mounted on said base, said handle having separate means for securing said inner sliding members of each of said first and second Bowden sliding member linkages to the handle, said handle being manually movable between a released position in which said inner sliding members are spaced relatively close to said reaction points and an actuated position for effecting substantially simultaneous, proportional, relative sliding movement between said inner sliding members and their respective outer sheaths of said first and second Bowden sliding element linkages thereby to apply said pair of brakes substantially simultaneously with a preselected proportion of braking force applied by each of said brakes.

4,267,747

SAFETY LEVER

William K. Wallace, Barneveld; David A. Giardino, Deerfield, and Gerrit van Nederynen, Frankfort, all of N.Y., assignors to Chicago Pneumatic Tool Company, New York, N.Y.

Filed Apr. 26, 1979, Ser. No. 33,467
Int. Cl.[3] G05G *9/04*
U.S. Cl. 74—526 **9 Claims**



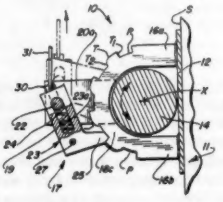
1. A safety throttle lever for use on hand-held tools, said lever being arranged for two operational modes, the first a tool non-operating mode, the second a tool operating mode wherein a throttle valve of the tool is activated, primary means to allow longitudinal movement of said lever by manual pressure while maintaining tool first operational mode, said primary means including a means having longitudinal slots formed on the lever and pin means for engagement by said slots, and secondary means to allow tool second operational mode after a given amount of lever longitudinal movement, said secondary means comprising notch means formed at an end of said longitudinal slots.

4,267,748

RELEASABLE LOCK MECHANISM

Lynn O. Grunewald, Cudahy, and Steven J. Hipp, Milwaukee, both of Wis., assignors to Rite Hite Corporation, Milwaukee, Wis.

Filed Oct. 2, 1978, Ser. No. 947,886
Int. Cl.[3] G05G *5/06*
U.S. Cl. 74—529 **8 Claims**



1. A releasable lock mechanism comprising a stationary first member; a second member mounted adjacent said first member for rotary movement relative to said first member between an inoperative idel position and a plurality of selected operative positions annularly spaced from said inoperative position, said second member including means offset from the rotary axis thereof urging said second member to normally assume said inoperative position; a first lock component carried by one of said members and having at least a curved peripheral segment provided with a plurality of annularly spaced pockets, each pocket corresponding to a selected operative position of said second member relative to said first member, the center of curvature of the first lock component peripheral segment being substantially coaxial with the rotary axis of said second member; and a pivotally adjustable second lock component carried by the other of said members and being in interlocking engagement with a peripheral pocket when said second member is in a selected operative position, said lock components, when in

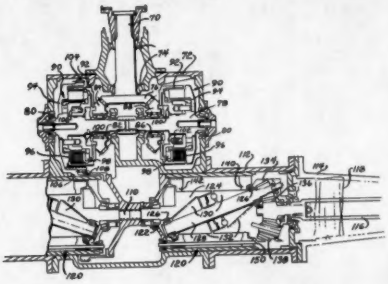
interlocking engagement, effecting retention of said second member in a selected operative position, said second lock component having means to transversely shift the pivotal axis thereof relative to the said other member upon a predetermined manual external force being applied to said second lock component in a direction away from the peripheral segment of said first lock component whereby said second lock component assumes an unlocked position.

4,267,749

COMPACT REVERSIBLE VARIABLE SPEED TRANSMISSION AND DIFFERENTIAL

Robert O. Chambers, Peoria, and Robert N. Stedman, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 12, 1979, Ser. No. 84,289
Int. Cl.³ F16H *37/06, 15/16*
U.S. Cl. 74—690 **4 Claims**



1. A compact, reversible, variable speed clutch, transmission and differential comprising:

a rotatable input shaft (**70**) having a drive gear (**76**) therein and adapted to be connected to a prime mover for rotation about a first axis;

forward and reverse gears (**88,84**) mounted for rotation about an axis or axes non-parallel to said first axis, said forward and reverse gears being engaged with said drive gear with said forward gear (**88**) being located oppositely from said reverse gear (**84**) with respect to said first axis;

a pair of selectively operable clutches (**90**) each having an input (**92**) and an output (**94**), the input of one clutch being connected to said forward gear and the input of the other clutch being connected to said reverse gear; and

a variable speed nutating transmission means having a pair of independently rotatable outputs (**116**) and an input (**110**) connected to both said clutch outputs for rotation about a second axis, said transmission means further including a pair of nutating elements (**130**) each having a surface (**132**) configuration defined by a non-cylindrical surface of revolution having an axis of revolution, means (**126,128**) mounting each of said elements for rotation about a third axis coincident with said axis of revolution, said mounting means being mounted for rotation about an axis different than said third axis, a pair of rotatable drive units (**134**), one for each nutating element, fixedly connected to the associated nutating element, a pair of second drive units (**140,142**), one for each nutating element, in frictional engagement with the surface of revolution of the associated nutating element, means (**150**) for selectively moving each of said second drive units along the associated surface of revolution while maintaining frictional engagement therewith, means (**124**) connecting said mounting means to one of said transmission means input and a corresponding one of said transmission means outputs, and means (**136**) connecting said rotatable drive units to the other of said mounting means and a corresponding one of said transmission means outputs;

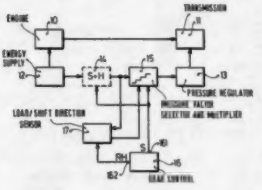
whereby (a) forward and reverse rotation of said transmission means outputs may be achieved by selectively engaging one or the other of said clutches, (b) variable speeds may be obtained by moving both said second drive units in concert along their respective surfaces of revolution, and (c) differential speeds may be obtained by moving one or the other or both of said second drive units differentially along their respective surfaces or revolution.

4,267,750

METHOD AND APPARATUS FOR ADJUSTING THE OPERATING FORCE APPLIED TO GEARS DURING GEAR SHIFTS

Helmut Espenschied; Uwe Kiencke, both of Ludwigsburg, and Alfred Schulz, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,172
Claims priority, application Fed. Rep. of Germany, Sep. 19, 1977, 2742032
Int. Cl.³ B60K *41/10*; F16H *3/74*
U.S. Cl. 74—866 **15 Claims**



1. In a drive system operative under load and no load conditions, said drive system having an engine (**10**), gearing (**11**) operative in a plurality of gear ratios, transmitting means (**11**) for transmitting operating force from said engine to said gearing, said transmitting means having a controllable transmit characteristic adapted to vary the maximum force transmittable therethrough, regulator means (**13**) connected to said transmitting means for controlling said controllable transmit characteristic in accordance with a regulator signal applied thereto, and energy supply means for furnishing metered energy to said engine and for furnishing an energy control signal indicative of the amount of so-furnished energy:

apparatus for furnishing said regulator signal to said regulator means, comprising multiplier means (**36**) connected to said energy supply means and said regulator means for multiplying said energy control signal by a selected one of a plurality of predetermined factors, the so-multiplied energy control signal constituting said regulator signal;

and selector means (**17, 39–46**) connected to said multiplier means for selecting said selected one of said predetermined factors in accordance with the direction of gear shift and the absence or presence of load on said engine.

4,267,751

SAW CHAIN DEPTH-GRINDING APPARATUS

Lynn J. Ziegelmeyer, P.O. Box 1112, Medford, Oreg. 97501

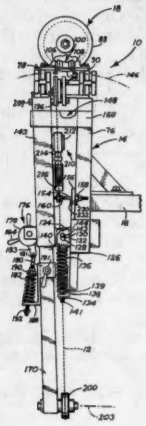
Filed Nov. 16, 1979, Ser. No. 94,885
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—25 A **8 Claims**

1. Apparatus for grinding the depth gauge of a saw chain cutter link having a cutter blade adjacent said depth gauge, said apparatus comprising

grinding means having a grinding surface contactable by said depth gauge,

means mounting said cutter link for movement toward and away from said grinding surface, and

guide means adjacent said grinding means positioned to be contacted by said cutter blade to limit the closest approach between said depth gauge and said grinding surface, whereby said depth gauge is ground by said grinding means to a selected depth relative to said cutter blade.



4,267,752

CUTTING APPARATUS FOR CONTINUOUS WEBS

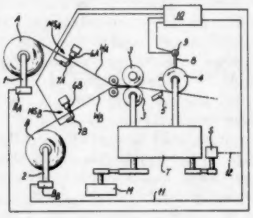
Graham A. B. Byrt, and Kenneth Chandler, both of Bristol, England, assignors to Masson Scott Thrissell Engineering, Bristol, England

Filed Feb. 19, 1980, Ser. No. 122,342

Claims priority, application United Kingdom, Feb. 20, 1979, 6015/79

Int. Cl.³ B26D *1/36, 1/38, 5/20*

U.S. Cl. 83—74 **8 Claims**



1. Apparatus for cutting a plurality of webs of paper or the like simultaneously to form a succession of sheets, including support means for an equal plurality of supply reels of web to be cut, a pair of pull rollers for pulling web from the supply reels, a rotary knife disposed to receive all of the webs from the pull rollers, a mark sensor from each web arranged to emit a detection signal on sensing each register mark on the web, a knife sensor arranged to emit reference signals representing rotation of said knife, drive means for said pull rollers and said knife, modifying means for each web, and control means arranged to receive said detection signals from the mark sensors and said reference signals from the knife sensor and to derive from the detection signals from each mark sensor, by comparison with said reference signals, feed control signals for the respective web, said feed control signals being applied to said modifying means for modifying the rate of feed of each web to the knife means to maintain the detection signals from the mark sensors in the desired relationship to the reference signals from the knife sensor so that a desired constant sheet length is produced.

4,267,753

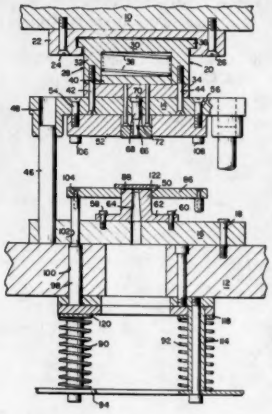
APPARATUS FOR PRODUCING A BLANK FROM STOCK MATERIAL

Edward D. Bennett, 1401 S. Ocean Blvd. Apt. 902, Pompano Beach, Fla. 33062

Filed Nov. 8, 1979, Ser. No. 92,403

Int. Cl.³ B21D *45/06, 28/16*

U.S. Cl. 83—124 **18 Claims**



1. A blanking punch and die combination comprising a blanking die defining an opening, a cooperating blanking punch dimensioned closely to mate with said opening, the die edge defining said opening being rounded, a stock engaging shedder displaceable within said die opening to engage and clamp stock, a stripper encircling said blanking punch and displaceable therealong to remove surplus stock after a blanking operation and spacer means disposed between the blanking die and the stripper to space the blanking die and the stripper apart by a distance exceeding the thickness of said stock.

4,267,754

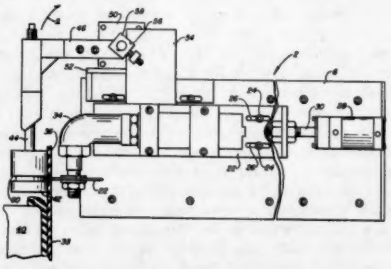
CARCASS BAND END TRIMMER

Michael C. Allaman; Leo T. Bailey, both of Cuyahoga Falls, and Richard E. Hudgins, Wadsworth, all of Ohio, assignors to The General Tire & Rubber Company, Ohio

Filed Nov. 7, 1979, Ser. No. 92,017

Int. Cl.³ B23D *19/08*

U.S. Cl. 83—187 **3 Claims**



1. Apparatus for trimming the end portion of a pneumatic

tire carcass ply that is mounted on a carcass building drum and has said end portion extending axially beyond the end of said carcass building drum, including a base support located radially outwardly from said end portion of said carcass ply, a cutting tool slidably mounted on said fixed support, means for moving said cutting tool with respect to said base support radially toward and away from cutting engagement with said end portion, and backing means for supporting the radially inward side of said end portion of said carcass ply at the location where said end portion is to be cut by said cutting tool, said apparatus characterized by said backing means including:

(a) a roller engageable with said radially inward side of said end portion at the location where said end portion is to be cut by said cutting tool,

(b) a shaft rotatably supporting said roller about an axis that is parallel to the axis of said carcass building drum when said roller engages said radially inward side of said end portion,

(c) means pivotally securing said shaft to said base support, said pivotal securing means permitting said shaft to swing about a pivot axis that is substantially perpendicular to said axis of said building drum, and

(d) means for swinging said shaft about said pivot axis to carry said roller between a position in which said roller engages said radially inward side of said end portion, and a position in which said roller is located axially outwardly from the end of said carcass ply.

4,267,755

FUR-CUTTING APPARATUS

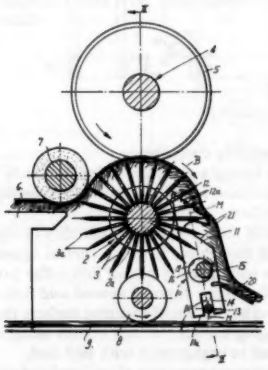
Hermann Oehler, Freudental, Fed. Rep. of Germany, assignor to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH, Besigheim and Oehler Maschinenbau GmbH, Ludwigsburg, both of, Fed. Rep. of Germany

Filed Feb. 27, 1980, Ser. No. 125,014

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1979, 7906315[U]

Int. Cl.³ B26D *7/06*

U.S. Cl. 83—423 **10 Claims**



1. In a fur-cutting apparatus for cutting of furs into strips and wherein the hair side faces downwardly, comprising a circular-knife roller, a porcupine, which is arranged below a circular-knife roller having plural circular knives, with long, radially aligned needles, which penetrate through the fur and which project between said circular knives, and a rake having leaf-shaped prongs, said rake being arranged on the outlet side of said porcupine and the free ends of said rake extending between said needles and releasing the fur from the tips of the needles, the improvement comprising wherein said rake is pivotally supported about an axle which is arranged parallel with respect to the axis of rotation of said porcupine and is driven by a gearing means provided between the porcupine axis and said rake, and which gearing effects a movement of the free ends of the prongs relative to said porcupine in a direction which is substantially radially outwardly and inwardly relative to said porcupine.

4,267,756

HOLDDOWN FOR POWER SHEAR

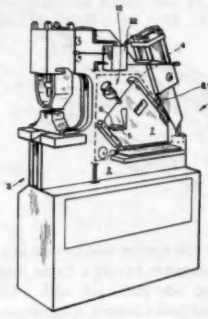
Richard Muhr, Attendorn, and Werner Schröder, Finnentrop, both of Fed. Rep. of Germany, assignors to Muhr und Bender, Attendorn, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,628

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838735

Int. Cl.³ B23D *33/02*; B26D *7/02*

U.S. Cl. 83—463 **7 Claims**



1. A power shear comprising:

a frame defining a shear plane;

a fixed blade secured to said frame;

a movable blade displaceable on said frame and along said plane past said fixed blade, whereby a workpiece extending across said plane can be sheared by said blades at said plane;

a holddown plate displaceable in a predetermined direction parallel to said plane on said frame between an up position relatively far from said fixed blade and a down position relatively close to said fixed blade, said holddown plate having a pair of plate edges parallel to said direction and each formed with a plurality of outwardly open notches; and

means including a pair of guide rails on said frame respectively engaging said plate edges, each rail having at least two teeth overreaching said plate and alignable with the respective notches in one of said positions for retaining said plate on said frame against movement perpendicular to said direction except in said one position, one of said teeth of each rail being aligned in a direction perpendicular to said plane in said one end position with one of the respective notches and the other end of said teeth of each rail being aligned in said direction perpendicular to said plane with the other of the respective notches in the other position of said plate, whereby said plate can be separated from said frame in a direction perpendicular to said plane in either of said positions.

4,267,757

CABLE SLITTER

Robert H. Frantz, Newville, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Aug. 30, 1979, Ser. No. 71,229

Int. Cl.³ B26D *7/02, 1/14, 5/10*

U.S. Cl. 83—464 **6 Claims**

1. A slitting tool for separating conductors of multi-conductor flat flexible insulated cable into individual conductors or

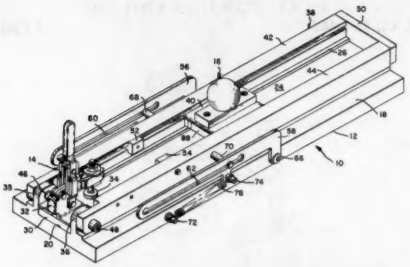
groups of conductors at one end of the cable, said tool comprising:

a base member defining an elongated, flat cable receiving surface;

a cable stop at one end of said surface;

cable clamping means adjacent said stop and adapted to secure a cable against said surface;

a cable cutter assembly pivotally attached by one end to an end of said base member so as to be movable with respect to said surface independent of said cable clamp to provide access to said surface in an open condition and aid in



securing the cable against said surface in a closed position, said cutting assembly having a frame formed by a pair of parallel spaced side rails each with a like end pivotally attached to said base member, hinge means attached intermediate the ends of the frame and said base and adapted to open the frame to an angle of approximately 45° with respect to said base, a slide block movable along said side rails longitudinally of said cable receiving surface, and cutter means carried by said slide block, said cutter means comprising a module exchangeably secured to said slide block and slitting blades carried in said module in longitudinally and transversely spaced relationship.

4,267,758

ACTUATOR MOUNT FOR POWER SHEAR OR PUNCH

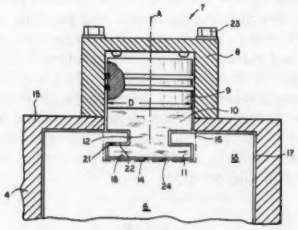
Richard Muhr, Attendorn, and Werner Schröder, Finnentrop, both of Fed. Rep. of Germany, assignors to Muhr und Bender, Attendorn, Fed. Rep. of Germany

Filed Sep. 5, 1979, Ser. No. 72,627

Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838733

Int. Cl.[3] **B23D** *15/14*

U.S. Cl. 83—571 **6 Claims**



5. A metalworking machine comprising:

a pair of substantially parallel and spaced-apart frame plates mounted fixedly relative to each other;

a slide displaceable in a slide direction parallel to said plates between said plates and having an edge formed with a throughgoing cutout opening at said edge and having a pair of cutout faces directed oppositely toward each other in said direction; and

a hydraulic ram having a cylinder fixed but releasably mounted on said plates, a piston displaceable in said cylinder is said direction, and a piston rod fixed to said piston and having an end engaged in said cutout and having a pair of piston faces directed oppositely away from each other in said direction and respectively engageable with said cutout faces, the piston face directed forwardly in said direction bearing on forward displacement in said direction on the cutout face facing backwardly and vice versa, said plates having plate edges adjacent said cylinder, said piston rod being displaceable between an extended end position extending relatively far into and between said plates and a fully retracted end position extending substantially less far into and between said plates, one of said plate edges being formed with a notch aligned in a direction transverse to said plates in said fully retracted position of said piston rod, whereby said piston rod can be transversely disengaged from said slide through said notch when in said fully retracted position.

4,267,759

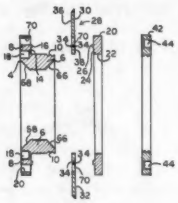
TOOL SAFETY LOCK RING

Richard D. Sullivan, and Allen E. Knies, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jul. 27, 1979, Ser. No. 61,465

Int. Cl.[3] **B27B** *33/08, 5/32*

U.S. Cl. 83—665 **9 Claims**



1. A tool assembly comprising:

a first collar having a generally cylindrical body portion and a flange portion, said flange portion including a tool engaging surface,

a circular, split tool comprising a plurality of segments, said tool, when assembled, having a central opening through which the body portion of said first collar extends,

a second collar being disposed around said first collar body portion and having a tool engaging surface, the respective tool engaging surfaces of said collars being on opposite sides of and in engagement with said tool,

an annular groove on one side of said tool and an annular rib on the tool engaging surface of the collar in engagement with said tool one side, said annular rib and groove interlocking with each other,

a second annular groove on the other side of said tool and a second annular groove on the tool engaging surface of the collar and in engagement with said tool other side, said second rib and groove interlocking with each other,

a locking collar threadedly secured to the body portion of said first collar and urging said second collar against said tool so as to tightly clamp said tool between said first and second collars, and

pins keying together the respective segments of said tool to said first collar flange portion.

4,267,760
SELF-GUIDING CIRCULAR SAW

Garth L. Smith, and Gordon Whitehead, both of Granby, Canada, assignors to Wallace Murray Canada Limited, Granby, Canada

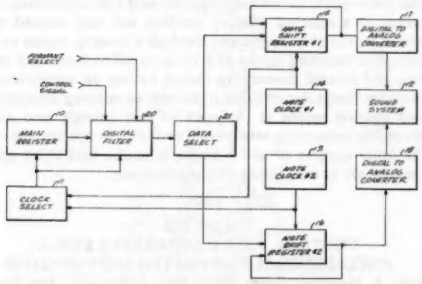
Filed Oct. 10, 1979, Ser. No. 83,234
Int. Cl.³ B23D *61/04*
U.S. Cl. 83—835 **5 Claims**

1. A self-guiding circular saw comprising a series of circumferentially spaced teeth around the periphery thereof, the saw having two radial parallel planar surfaces, the teeth defining a predetermined kerf wider than the thickness of the saw blade defined by said planar surfaces, a pair of ribs protruding one on opposite surfaces of the saw blade and each rib being co-extensive with the other and extending from the periphery of the blade linearly toward the central area of the blade, the combined thickness of the ribs and the blade being greater than the thickness of the blade but less than the kerf defined by the teeth of the saw such that the ribs will function to guide the saw in a straight path in a workpiece.

4,267,761
MUSICAL TONE GENERATOR UTILIZING DIGITAL SLIDING FORMANT FILTER

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co. Ltd., Hamamatsu, Japan

Filed Oct. 6, 1977, Ser. No. 839,916
Int. Cl.³ G10H *1/00, 1/02;* G06F *7/38*
U.S. Cl. 84—1.01 **16 Claims**



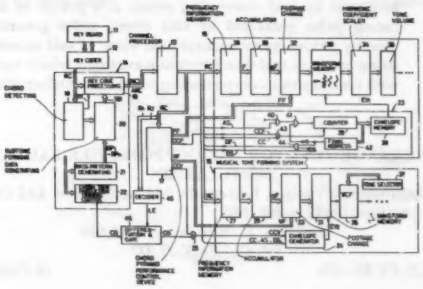
1. A digital tone generator comprising:

a source of a set of digital word coded to represent the relative amplitudes of a series of equally spaced points defining the complex periodic waveshape of an audio tone, the number of words defining one cycle of a tone being a predetermined fixed number independent of the frequency of the tone, digital filter means receiving each of the words from said source in predetermined time sequence for digitally filtering the waveshape, the digital filter means modifying in a predetermined manner the coded value of the words to change the relative amplitudes of the successive points defining the periodic waveshape, a digital-to-analog converter, means transferring successive words from said source through the digital filter to the converter at a variable rate, said transferring means including transient suppressing means for blocking transfer of a predetermined number of the initial data points from the output of the digital filter means to the converter, and means setting said rate equal to the desired pitch frequency multiplied by the number of words defining one cycle of the tone being generated.

4,267,762
ELECTRONIC MUSICAL INSTRUMENT WITH AUTOMATIC ARPEGGIO PERFORMANCE DEVICE

Eiichiro Aoki, and Tsutomu Suzuki, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jan. 16, 1978, Ser. No. 870,008
Claims priority, application Japan, Jan. 19, 1977, 52-4672
Int. Cl.³ G10H *1/28, 1/38, 5/00*
U.S. Cl. 84—1.03 **10 Claims**



1. An electronic musical instrument comprising:

(a) first means for producing, according to information representative of the note name of a single depressed key, key information representative of the note names of a plurality of tones which are in predetermined non-octave, chord interval relations to the tone of said key;

(b) second means for detecting said key information successively at predetermined time intervals; and

(c) third means for producing tones corresponding to the key information detected by said detection means in response to the detection thereof, one at a time over plural octaves.

4,267,763
FUNCTION GENERATORS OF TIME-DEPENDENT VARIABLE TYPE

Tsuyoshi Futamase, and Masanobu Chibana, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Oct. 24, 1979, Ser. No. 87,660
Claims priority, application Japan, Oct. 28, 1978, 53/133001
Int. Cl.³ G10H *1/06;* G06F *1/02*
U.S. Cl. 84—1.22 **10 Claims**

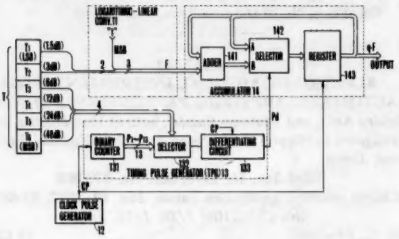
1. A function generator of time-dependent variable type which generates a time function waveshape which varies with time at a rate corresponding to time information for determining a time-dependent variable, comprising:

means for setting multi-bit digitalized information which represents time information in terms of a logarithm;

means for dividing the bits of said time information into upper order bits and lower order bits at a bit of a predetermined order;

means for converting a portion of said time information represented by said lower order bits into linear information;

a timing pulse generator which produces a timing pulse having a period corresponding to a value obtained by converting a portion of said time information represented by said higher order bits into a natural number; and



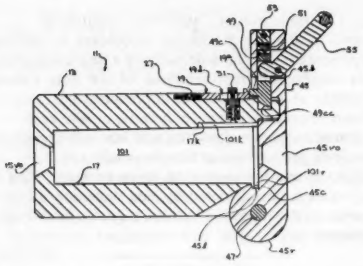
Accumulating means for accululating said linear information produced by said converting means at a period of said timing pulse generated by said timing pulse generator thereby producing an accumulated value of said accumulating means as said time function waveshape which varies with time at a rate corresponding to said time information.

4,267,764

ARRANGEMENT FOR USE IN PROJECTILE LAUNCH SIMULATION

Christopher J. Yaniger, Lutherville, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Jun. 1, 1979, Ser. No. 44,624
Int. Cl.[3] F41F *11/00*
U.S. Cl. 89—25 **10 Claims**



1. A cartridge chamber and breech arrangement comprising

a chamber housing having a cartridge chamber formed therein,

a firing pin mounted in an opening formed in a side wall of said housing and communicable with the interior of said chamber to enable said firing pin to be in alignment with a side-mounted primer on a projectile when the projectile is fully chambered,

a breech block movable from an open position to a closed chamber position relative to said cartridge chamber,

lock means for locking said breech block in said closed position,

and a movable interrupter on said housing and being normally spring-biased to a firing-pin-movement-interrupt position whereby the firing pin is prevented from firing,

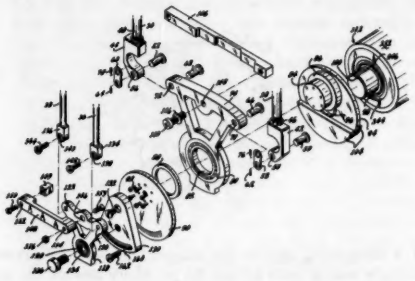
said interrupter being movable in response to closure and locking of said breech block, to thereby move to a noninterrupt position relative to said firing pin and thereby enable said firing pin to be actuated for firing of a cartridge primer aligned therewith only when such cartridge is chambered and securely locked in position by said breech block and breech block lock.

4,267,765

RECIPROCATING ENGINE WITH IMPROVED FEED AND EXHAUST VALVE MEANS

John H. Hedger, P.O. Box 357, Lakeside, Calif. 92040

Filed Dec. 19, 1978, Ser. No. 970,877
Int. Cl.[3] F01B *1/00*; F01L *31/00*
U.S. Cl. 91—186 **5 Claims**



1. In a fluid driven reciprocating engine which comprises an engine block containing at least two parallel cylinders, a piston located in each of said cylinders for parallel reciprocating movement therein, piston rods rigidly connected at one end to each of said pistons extending out of said cylinders along the cylinder centerlines into a housing containing first connecting means operatively connecting the other end of each of said piston rods to a single crank pin on a rotary output shaft, and valve means within said block for selectively supplying fluid to and exhausting fluid from said cylinders above and below said pistons, the improvement wherein said valve means comprise cylinder means within said block each containing a spool valve attached to a first end of a valve operating rod extending out of said block for reciprocation along paths substantially parallel to said piston rods, second connecting means connecting the second ends of the operating rods to vavle timing means, said valve timing means comprising a first and second plate means, said first plate means attached to said single crank pin by attachment means, said second plate means connected to said first plate means in a manner for allowing selected relative positioning therebetween, locking means carried by said second plate means for locking together said first and second plate means at a selected relative position and said second plate means is rotatably connected through a bearing means to said second connecting means at a location offset from said crank pin, said second connecting means having an approximately isosceles triangular configuration with an opening surrounding said bearing means at the apex of said triangle and means pivotably connecting said second ends of said operating rods to the other corners of said triangle, whereby said valve spools reciprocate as said piston rods reciprocate.

4,267,766

CONTROL VALVE APPARATUS FOR A PNEUMATICALLY OPERATED SERVOMOTOR

John J. Horsting, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

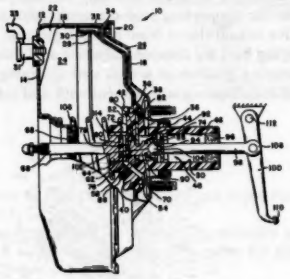
Filed Jan. 29, 1979, Ser. No. 6,989
Int. Cl.[3] F15B *9/10*
U.S. Cl. 91—369 A **13 Claims**

1. In a servomotor having a housing with a first chamber separated from a second chamber by a wall, said wall being moved by a pressure differential developed between a first fluid in the first chamber and a second fluid communicated to the second chamber, said pressure differential creating an output force in the wall in response to an input force to move an output member, the improvement comprising:

valve means including a first resilient member located in said wall adjacent said output member and a second resilient member with slits therein, said first resilient member hav-

ing a first passage therethrough for connecting said first chamber with said second chamber, said first passage providing a first flow path through which the first fluid is communicated from the first chamber to sthe second chamber; and

plunger means responsive to said input force for operating said valve means, said first resilient member being de-



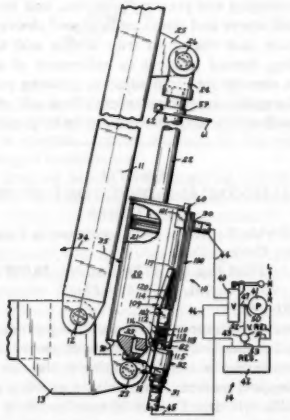
formed by being compressed between said plunger means and output member by the input force acting on said plunger means and the resistance of the output member to movement by the output force to seal said first passage and interrupt communication of said first fluid to said second chamber and said second resilient member being expanded to thereafter allow said communication of said second fluid to the second chamber through said slits.

4,267,767

POSITION LOCK

Gary Hodapp, Mankato; Richard Peterson, Le Sueur, and Richard Schulz, Lake Crystal, all of Minn., assignors to Hiniker Company, Mankato, Minn.

Filed Jul. 2, 1979, Ser. No. 53,951
Int. Cl.³ F15B *13/04;* F16H *21/02*
U.S. Cl. 91—404 **16 Claims**



14. In combination:

a fluid actuator including a cylinder, having fluid ports near its ends, and a piston reciprocable in said cylinder between the sites of said ports and having a piston rod extending out of said cylinder;

valve means carried by said actuator and linearly actuable to prevent flow of fluid through one of said ports in a first sense, whereby to prevent movement of said piston in a first direction;

mechanical means, including a stop member adjustable along said piston rod outside said cylinder and a push rod slidably carried by said cylinder, normally operative when said piston, moving in said first direction, reaches a predetermined position to actuate said valve means;

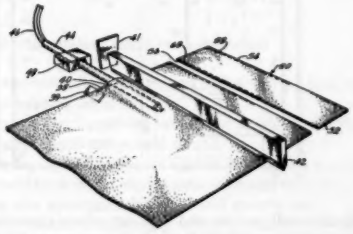
and manual means for operating said push rod independently of the position of said piston, to cause actuation of said valve means.

4,267,768

PROCESS FOR FABRICATING A RECLOSABLE BAG

Patrick J. Cieslak, and Michael J. Moran, both of Sierra Madre, Calif., assignors to David M. Cieslak, Sierra Madre, Calif., a part interest

Division of Ser. No. 724,553, Sep. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 654,117, Feb. 2, 1976, abandoned. This application Dec. 27, 1977, Ser. No. 865,003
Int. Cl.² B31B *1/90, 49/04*
U.S. Cl. 493—203 **3 Claims**



1. A process for fabricating a recloseable bag comprising the steps of:

(1) passing a pair of superimposed layers of sheet material formed by longitudinally folding a single sheet of thermoplastic material along a defined path to a cutting and sealing station;

(2) positioning a length of cable comprising a pair of spaced apart strands of bendable inelastic material encapsulated in thermoplastic cable material longitudinally of the bag at a point straddling a line of separation of one bag from an adjacent bag and

(3) separating the layers of thermoplastic material into separate and individual bags by cutting and sealing the superimposed sheets of thermoplastic material and the cable of thermoplastic material along a line between the pair of inelastic strands to bond the sheets of thermoplastic material to each other and to the thermoplastic cable material to define the sealed side edges of the bag and to secure a strand of inelastic material along each side edge of the bag in at least one encapsulating layer of thermoplastic material.

4,267,769

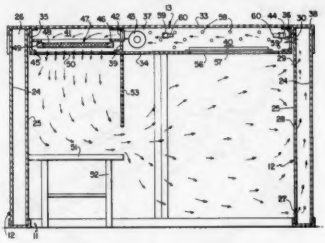
PREFABRICATED KNOCKDOWN CLEAN ROOM

George B. Davis, Frederick, and Robert W. Irving, Boonsboro, both of Md., assignors to Environmental Air Control, Inc., Hagerstown, Md.

Filed Feb. 22, 1979, Ser. No. 14,177
Int. Cl.³ B01D *50/00*
U.S. Cl. 98—33 A **3 Claims**

1. A prefabricated knockdown clean room for providing clean air to a work area comprising a plurality of independent base members located in end-to-end relationship, each of said base members being generally U-shaped in cross section and facing upwardly, a tie plate member bridging each pair of aligned base members, said tie plate members and said base

members having interlocking means so that said tie plate members substantially prevent relative lateral and lengthwise movement of contiguous base members, a plurality of independent side wall sections vertically slidably received within said base members, each of said side wall sections having spaced inner and outer panels connected together by end walls, the inner panel of certain of said side wall sections being imperforate and the inner panel of at least one side wall section having at least one return opening therein to permit air within the clean room to enter the space between said inner and outer panels, sealing means attached to the exterior of at least one end wall of each side wall section and engagable with a contiguous side wall section, a roof section including top and bottom panels connected together by end walls and side walls and defining a hollow compartment, generally U-shaped yoke means on at least said end walls of said roof section for slidably receiving the upper portions of said side wall sections and detachably connecting said roof section and side wall sections together, a partition separating said compartment into a plenum chamber and an air return chamber, the space between said panels of



said one wall section and said air return chamber being in communication with each other, blower means for moving air from said air return chamber into said plenum chamber, said bottom panel of said roof section having an opening into said plenum chamber, a micro filter extending entirely across said roof section opening so that air from said plenum chamber must be discharged through said micro filter, depending barrier means supported by said roof section adjacent to said roof section opening and extending entirely across said clean room, a work area located directly below said micro filter and said opening, air from said plenum chamber being directly introduced into said work area, said one of said side walls being remotely located from said work area so that the flow of clean air is maintained in a path from said plenum chamber into said work area and subsequently to the remaining portion of the interior of said clean room from which such air is returned to the plenum chamber by way of said one of said side walls and said air return chamber, whereby said base member, side wall sections and roof section may be easily assembled on a relatively flat surface to form a clean room.

4,267,770

CHARGE FEEDING AND SLEEVE VALVE CONSTRUCTIONS FOR AUTOMATIC PLATEN PRESS

Ralph E. Reiner, 6474 Chestnut La., Orchard Park, N.Y. 14127

Continuation-in-part of Ser. No. 36,062, May 4, 1979. This application Oct. 2, 1979, Ser. No. 81,139

Int. Cl.³ B30B *9/06*

U.S. Cl. 100—122 **10 Claims**

1. A press particularly adapted for use in extracting juice from fruit, said press comprising in combination:

a pair of vertically disposed press platens including a stationary platen element and a movable platen element supported for horizontal movement relative to said stationary platen element between remote charging and adjacent pressing positions;

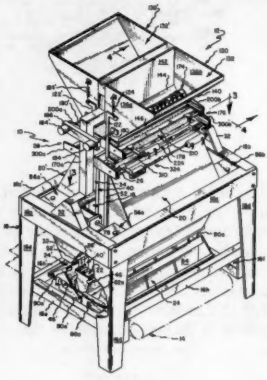
a sleeve formed of filter cloth;

means to movably suspend said sleeve to extend vertically and horizontally intermediate said platen elements, said sleeve having open upper and lower ends and side surfaces disposed for pressing engagement by said platen elements;

means for depositing a charge of fruit to be pressed within said sleeve through said upper end;

means for selectively closing said sleeve adjacent said lower end;

means for selectively closing said sleeve adjacent said upper end including a pair of horizontally disposed clamping bars arranged adjacent said side surfaces of said sleeve, means for supporting said clamping bars for movement relative to said sleeve from an open position in which said clamping bars are disposed adjacent said side surfaces and a clamping position in which said clamping bars are disposed in deforming engagement with said side surfaces for



clamping off and closing said sleeve, and means for moving said clamping bars between said open and closed positions, said means for supporting said clamping bars additionally permitting horizontal movements thereof while in deforming engagement with said sleeve as an incident to horizontal movements of said sleeve resulting from movements of said movable platen element between said charging and pressing positions, said means for closing said lower and upper ends of said sleeve cooperating to retain said charge of fruit within said sleeve during pressing thereof incident to movement of said movable platen element into said adjacent pressing position; and

means for collecting juice extracted from said charge of fruit disposed within said sleeve incident to pressing thereof.

4,267,771

SELF-ALIGNING MANDREL FOR CAN PRINTING MACHINES

James S. Stirbis, Littleton, Colo., assignor to Coors Container Company, Golden, Colo.

Filed Sep. 13, 1979, Ser. No. 74,979

Int. Cl.³ B41F *17/22*

U.S. Cl. 101—40 **13 Claims**

1. Apparatus for supporting a can during printing of the can by a printing machine having blanket means for applying pressure to the can to transfer printing to the can, comprising:

a rigid support member fixed on said printing machine;

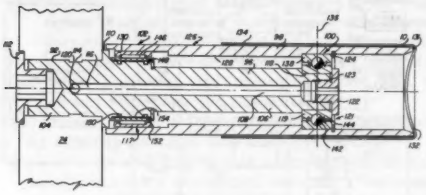
a generally cylindrical sleeve circumferentially mounted on said support member in generally coaxial relationship therewith;

said sleeve supporting and receiving thereover in a predetermined position a generally cylindrical can, said can having an axial length;

first mounting means for rotatably pivotably mounting said sleeve relative to said support member to permit pivoting of said sleeve relative to the support member between a

rest position whereat said sleeve and said support member are coaxial and variable pivotally displaced non-coaxial positions relative to said support member;

said first mounting means being located in the vicinity of the



mid-portion of said axial length of a can supported on said sleeve; and

second mounting means for rotatably, resiliently mounting said sleeve relative to said support member for positioning said sleeve in the rest position.

4,267,772

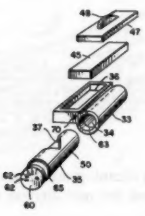
INK SUPPLY CARTRIDGE

Roy Maitland, Laguna Niguel, Calif., assignor to Count Numbering Machine, Inc., San Diego, Calif.

Continuation of Ser. No. 875,379, Feb. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 714,004, Aug. 13, 1976, abandoned. This application Oct. 30, 1979, Ser. No. 89,404

Int. Cl.³ B41F *1/42, 1/48*

U.S. Cl. 101—103 **3 Claims**



1. An ink supply cartridge for use with an insignia applying device having a pivotally mounted support member thereon and a movable insignia element therein, the ink supply cartridge including in combination:

a cartridge housing having an ink applying portion containing applicator means extending outwardly from said cartridge housing and adapted to communicate with the movable insignia element to permit the flow of ink to the insignia element, said cartridge housing further including a tubular ink supplying portion adapted to receive a tubular ink supply member, said cartridge housing further having partition means positioned between said ink applying portion and said tubular ink supplying portion with said partition means having at least one opening therein, and wherein said tubular ink supply member is rotatable in said ink supplying portion and includes a V-shaped slotted opening in the tubular surface thereof which communicates with at least one opening in said partition means for predeterminely controlling the flow of ink from said ink supplying portion to said ink applying portion and said applicator means, and wherein said cartridge housing further includes a projection clip member integral thereto and extending outwardly from said ink supplying portion adjacent said ink applying portion to define an opening therebetween, said clip member being engageable with the pivotally mounted support member when the same is positioned between said clip member and said applying portion to firmly hold said applicator means in said cartridge housing and said cartridge housing in engagement with the insignia applying device to permit the inking of the insignia element after each cycle of operation of the insignia applying device.

4,267,773

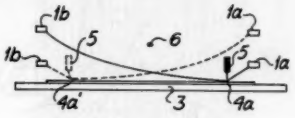
SILKSCREEN PRINTING MACHINE

Sven Scherp, Södertälje, and Sylve J. D. Ericsson, Tumba, both of Sweden, assignors to Svecia Silkscreen Maskiner AB, Norsborg, Sweden

Filed Jan. 31, 1979, Ser. No. 7,972

Int. Cl.³ B05C *17/04;* **B41L** *27/00*

U.S. Cl. 101—123 **4 Claims**



1. A silkscreen printing machine, comprising:

a table;

a stencil mounted on a frame, said frame having first and second opposing ends;

support means for supporting said frame above said table;

a squeegee arranged above said stencil;

means for urging said squeegee against said stencil to press said stencil against and into contact with said table and for moving said squeegee relative to said stencil; and

said support means including positioning means for vertically moving each of said ends of said frame relative to the table to position said frame at an oblique angle relative to said table to thereby enable said stencil to be positioned at an oblique angle relative to said table at the point of contact of said stencil with said table, said positioning means including at least one rotatable arm connected to said first end of said frame, at least one rotatable arm connected to said second end of said frame, means for rotating said rotatable arms, and means for transforming a rotational motion of said rotatable arms into independent vertical motion of said first and second ends of said frame.

4,267,774

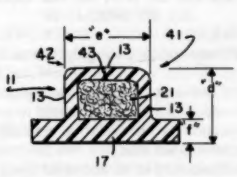
HEAT-SEALED PYROTECHNIC CAP

Harold H. Hall, Jr., Marblehead; Andre C. Bouchard, Peabody, both of Mass.; John W. Shaffer, and Thomas L. Gavenonis, both of Williamsport, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jan. 10, 1979, Ser. No. 2,263

Int. Cl.³ C06C *9/00*

U.S. Cl. 102—201 **10 Claims**



1. In a pyrotechnic cap for providing an audible signal of high intensity upon receipt of energy in the form of light and/or heat from a flashlamp wherein said cap comprises a plastic container having a quantity of pyrotechnic mixture hermetically sealed therein separately from said flashlamp, the improvement wherein said container includes a heat-sealed end

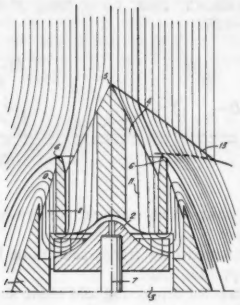
portion, said heat-sealed end portion providing said hermetic seal.

4,267,775

ARRANGEMENT IN RAM AIR TURBINES

Kyrre Sjotun, and Tore Rognmo, both of Kongsberg, Norway, assignors to A/S Kongsberg Våpenfabrikk, Norway

Filed Nov. 1, 1978, Ser. No. 956,577
Claims priority, application Norway, Nov. 2, 1977, 773755
Int. Cl.[3] F42C *11/00*
U.S. Cl. 102—208 1 Claim



1. An arrangement in ram air turbines for driving an electric generator in a missile, in which ram air is supplied to the turbine wheel through an axial inlet positioned at the forward end of the missile which is surrounded by a forwardly protruding annular edge and leaves the missile through discharge openings at the periphery of the missile outside the annular edge, the forward end of the missile inside the annular edge being conical with an apex protruding forwardly of the annular edge, characterized in that: the inlet is divided into a plurality of inlet ducts arranged in circular spaced relationship around the conical forward end and that the discharge openings are forwardly directed and positioned immediately adjacent said annular edge, the position of said discharge openings being located with respect to said annular edge to co-operate with the air flowing over said forward end and over said discharge openings at subsonic speeds and the shock waves produced at said forward end at supersonic speeds to effectively limit the flow of air through the turbine and the turbine speed at high missile velocity.

4,267,776

MUZZLE VELOCITY COMPENSATING APPARATUS AND METHOD FOR A REMOTE SET FUZE

Curtis L. Eickerman, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 29, 1979, Ser. No. 53,617
Int. Cl.[3] F42C *11/06*
U.S. Cl. 102—215 12 Claims

1. Muzzle velocity compensating apparatus for a remote set fuze comprising:

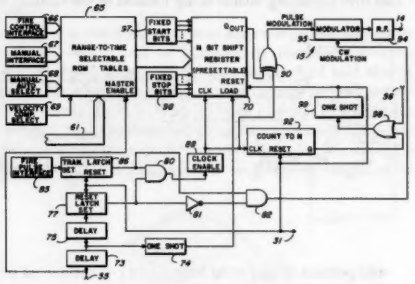
(a) a source of constant frequency timing pulses;

(b) a Doppler radar transceiver mounted to provide Doppler pulses proportional to the relative velocity of a projectile carrying a remote set fuze;

(c) a counter connected to be activated for a predetermined number of Doppler pulses from said transceiver and to count timing pulses from said source during the activated period;

(d) decode means connected to said counter for utilizing the pulse count to provide an indication of the measured velocity of the projectile;

(e) range set means for presetting an operating time corresponding to a desired range into the apparatus utilizing a predicted projectile velocity; and



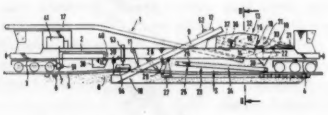
(f) means coupled to said range set means and said decode means for adjusting the corresponding time for said preset range to compensate for differences between the predicted velocity and the measured velocity.

4,267,777

MOBILE BALLAST CLEANING MACHINE

Josef Theurer, Vienna, and Karl Fölser, Linz-Urfahr, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed Jun. 11, 1979, Ser. No. 47,010
Claims priority, application Austria, Jun. 16, 1978, 4418/78
Int. Cl.[3] E01B *27/10*
U.S. Cl. 104—7 R 17 Claims



1. A mobile ballast cleaning machine comprising

(a) a frame mounted for mobility on a track supported on ballast,

(b) a drive for moving the frame along the track in an operating direction,

(c) a drive monitoring device producing an output signal responsive to the drive speed,

(d) means mounted on the frame for excavating ballast from a track section and for conveying the excavated ballast,

(e) a drive for moving the ballast excavating and conveying means,

(f) another drive monitoring device producing an output signal responsive to the speed of the drive for moving the ballast excavating and conveying means,

(g) a ballast cleaning means arranged on the frame to receive the ballast from the excavating and conveying means, to clean the ballast and to discharge the cleaned ballast into a conveying path,

(h) means mounted on the frame in the conveying path for conveying the cleaned ballast discharged from the ballast cleaning means and for redistributing the cleaned ballast to the excavated track section,

(i) a measuring means arranged to measure the amount of conveyed cleaned ballast before it is redistributed to the excavated track section,

(j) a measuring means monitoring device producing an output signal responsive to the measured amount of conveyed ballast,

(k) a ballast storage receptacle arranged on the frame in the conveying path for selectively receiving the cleaned bal-

last from the ballast cleaning means and discharging the stored ballast to the conveying and redistributing means,

(l) a ballast redistribution monitoring and control arrangement for controlling the amount of redistributed ballast, the monitoring and control arrangement including

(1) an adjustment circuit means responsive to the output signals produced by the monitoring devices whereby the amount of redistributed cleaned ballast is controlled by the drive speed of the machine, the drive speed of the ballast excavating and conveying means, and the amount of the conveyed cleaned ballast,

(m) a ballast flow control means in the ballast cleaning means for adjusting the ballast flow therethrough, and

(n) a drive for actuating the flow control means, the monitoring and control arrangement including a first control element responsive to the adjustment circuit means and connected to the ballast flow control means drive for operating the drive.

4,267,778

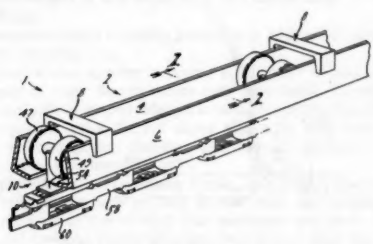
OVERHEAD CONVEYOR TRACK SYSTEM

William V. Wilkie, 2953 George La., Ludington, Mich. 49431

Filed Aug. 13, 1979, Ser. No. 66,087

Int. Cl.³ E01B *3/00*

U.S. Cl. 104—94 **9 Claims**



1. An overhead trolley conveyor system comprising an overhead track and a plurality of trolleys, adjacent trolleys being connected by a flexible, inextensible member, said track comprising a pair of longitudinally extending, parallel angle irons and a plurality of longitudinally spaced strap members each of said angle irons having an inwardly extending flange and an upwardly extending wall, each of said strap members having a channel-shaped cross section with a pair of downwardly extending legs, each of said legs having a laterally inwardly facing surface canted from the vertical such that the lower portion thereof lies laterally outwardly from the upper portion thereof, said surface of one of said legs being fixedly attached to a portion of the laterally outer side of one of said walls, and said surface of the other of said legs being attached to a portion of the laterally outer side of the other of said walls, and each of said trolleys comprising a pair of tapered wheels interconnected by an axle and having a hanger attached thereto, each of said wheels being adapted to roll longitudinally along the upper surface of one said flange, each of said pair of angle irons being spaced a distance from the other sufficient to allow free extension of said hanger therebetween but insufficient to allow one of said pair of tapered wheels to extend therebetween before the other of said pair of tapered wheels contacts the inwardly facing surface of one of said vertically extending walls of one of said angle irons.

4,267,779

MECHANICALLY TRACKABLE ROAD VEHICLE

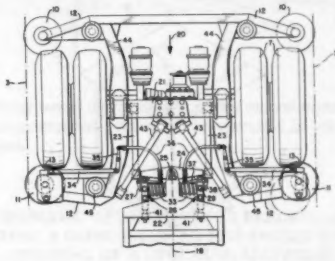
Hellmuth Binder, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,613

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1978, 2844626

Int. Cl.³ B61F *9/00*

U.S. Cl. 104—247 **39 Claims**



1. A bi-mobile mechanically trackable vehicle adapted to be driven with or without a guide track, the vehicle including a steerable axle having steerable wheels mounted thereon, at least one additional non-steerable axle having non-steerable wheels mounted thereon, a plurality of tracking transverse guide roller means for guiding the vehicle along the guide track, means for at least indirectly mounting the transverse guide roller means at the respective axles in an area of the respective wheels of the vehicle, means for mounting the at least one non-steerable axle on the vehicle so as to be freely pivotable about a vertical axis, and means for selectively locking the at least one non-steerable axle in an exact transverse position for driving without a guide track and for unlocking the at least one non-steerable wheel from said transverse position, characterized in that the means for at least indirectly mounting the transverse guide roller means includes means for enabling at least one of the transverse guide roller means to be transversely displaceable within preset limits, means are provided for elastically tensioning said at least one guide roller means so as to move the same from a first end position defining an operating position to a second end position, said first and second end positions are within the preset limits, and in that means movable with the at least one transverse guide roller means are provided for coupling the transverse guide roller means with the selective locking and unlocking means so as to automatically unlock the at least one non-steerable axle wheel when the at least one transverse guide roller means is in the operating position and for automatically locking the at least one non-steerable axle wheel when the transverse guide roller means is in the second end position.

4,267,780

LOAD SUPPORTING AND HANDLING MEANS

Joseph S. Candella, 6309 Manor Rd., Niagara Falls, N.Y. 14304

Continuation of Ser. No. 762,417, Jan. 25, 1977, abandoned. This application Apr. 21, 1978, Ser. No. 898,656

Int. Cl.² B65D *19/26*

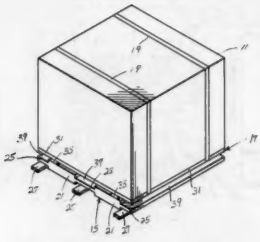
U.S. Cl. 108—52.1 **1 Claim**

1. Load-supporting and handling means comprising:

(A) a permanent and reusable pallet base which comprises a plurality of laterally spaced, parallel supporting members of equal height adapted to rest on a floor and a plurality of base panels integral with said supporting members, said base panels having a thickness less than that of said supporting members and each extending laterally from an edge face of one of said supporting members intermediate the top and bottom thereof, at least one of said supporting

members being spaced inwardly from opposite side edges of said pallet base, thereby providing spaces between said base panels and said floor in which the fork of a fork-lift truck may enter for lifting said pallet base by said panels, said base being symmetrical with respect to a horizontal plane extending through the centers of said supporting members and said panels, and

(B) a disposable load board adapted to be carried by and supported on said pallet base, said load board comprising a load-supporting panel and a plurality of laterally spaced,



parallel runners, said load-supporting panel having a flat, uninterrupted, upper face and substantially the same horizontal dimensions as said pallet base and said runners extending outwardly from the lower face of said load-supporting panel and being adapted to rest on and parallel to said supporting members when said pallet base and load board are assembled, thereby providing spaces between said base and said load-supporting panel for entry of the fork of a fork-lift truck, said load board having at least one runner for cooperation with each of the supporting members of said base.

4,267,781

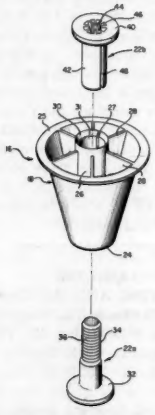
PALLET AND POST CONSTRUCTION THEREFOR

Richard J. Powers, 4340 N. Marmora, Chicago, Ill. 60639

Filed Jul. 30, 1979, Ser. No. 61,674

Int. Cl.[3] B65D *19/26, 19/40*

U.S. Cl. 108—56.1 **10 Claims**



1. A post for use in combination with a pallet having at least an upper platform with a plurality of holes formed in it, said post comprising, in combination, an inner body, a plurality of flanges extending outwardly from said inner body, the peripheral edges of said flanges defining a truncated, cone-shaped surface about said post, a top wall on at least the larger end of said post, said inner body having a portion extending beyond said flanges at at least the top wall end thereof and having an axially aligned bore extending through it, the extended portion of said inner body being disposable within the respective ones of said holes in said upper platform, and a rivet having an enlarged diameter base portion and a cylindrical shaft portion formed integrally therewith, said cylindrical shaft portion being proportioned to extend through a respective one of said holes in said upper platform and into said bore in said body of said post, complimentary interlocking means on said cylindrical shaft portion of said rivet and on the side wall of said bore in said inner body which interlock to fixedly and replaceably secure said post to said upper platform; and a slot in said inner body extending the longitudinal length thereof for providing sufficient relief to permit said rivet to be inserted into said bore in said body without stripping said interlocking means.

4,267,782

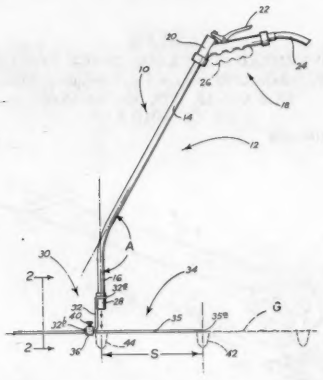
PORTABLE, HAND-HELD DEVICE FOR FORMING CROP-RECEIVING CAVITIES IN THE GROUND

Gene B. Talbott, Box 173-D, Rte. 1, Banks, Oreg. 97106

Filed Apr. 2, 1979, Ser. No. 25,866

Int. Cl.[3] A01C *5/02*

U.S. Cl. 111—7.1 **3 Claims**



1. Portable, hand-held device for use in transplanting crops comprising:

a handle for gripping by an individual adapted for connection to a supply of fluid;

substantially rigid tubular means including a first tubular portion extending from said handle and a second tubular portion extending from said first tubular portion, said first and second tubular portions having their longitudinal axis offset from one another;

a nozzle mounted on a discharge end of said second tubular portion for directing fluid outwardly therefrom so that the fluid will impinge against the ground to form a crop receiving cavity in the ground;

orienting means connected to said tubular means adjacent said discharge end including a first member extending beneath said discharge end and generally parallel to the longitudinal axis of said second tubular portion and a stabilizing means comprising an elongate member secured to said first member, said elongate member being positionable along its length against the ground to orient said tubular means and said nozzle above the ground so that fluid may be discharged substantially vertically into the ground; and

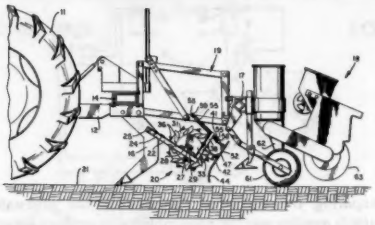
adjustable means interconnecting said first member and said elongate member operable for preselecting and fixing the distance between the ends of said elongate member relative to said discharge end.

4,267,783

SEED BED PREPARATION METHOD AND APPARATUS

Robert W. Hendrix, and Jerry W. Hendrix, both of Rte. 2, Statesboro, Ga. 30458

Filed Mar. 7, 1979, Ser. No. 18,165
Int. Cl.³ A01C 5/06; A01B 13/02
U.S. Cl. 111—52 **2 Claims**



1. In an agricultural implement including a sub-soiler for cutting a deep furrow in the earth to define a location for a crop row and a planter mounted behind and movable with said sub-soiler for planting seeds along the row defined by said sub-soiler, the improvement comprising a seed bed preparation means mounted between said sub-soiler and said planter, said seed bed preparation means comprising:

rotary, bladed means operating directly over the furrow formed by said sub-soiler for filling in the furrow formed by said sub-soiler with soil turned up by said sub-soiler and for forming a depression along the crop row, said rotary, bladed means rotating in a direction of rotation upon movement of said implement, and comprising:

a frame;

a horizontal axle rotatably mounted on said frame transverse to the crop row;

a central disc member mounted at its center to said axle;

a pair of outer disc members each mounted at its center to said axle in spaced relation to said central disc member on opposite sides thereof along said axle, said outer disc members having diameters less than the diameter of said central disc member; and

a plurality of soil-working blades, said blades converging toward said axle as they extend from said central disc member to one of said disc members, and each of said soil-working blades being attached to said outer disc member at a point relative to the direction of rotation of said disc members ahead of the point at which said soil-working blade is attached to said central disc member so as to be angled to move soil toward said central disc member as said soil-working blade rotates with said axle; and

a means for packing the soil in a central portion of the depression prior to said planter.

4,267,784

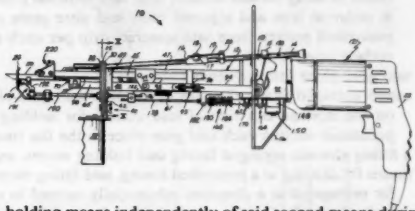
TUFTING MACHINE

Theodore C. Heemstra, 958 Hollywood, NE., Grand Rapids, Mich. 49505

Filed Nov. 30, 1979, Ser. No. 99,021
Int. Cl.³ D05C 15/00
U.S. Cl. 112—80 **32 Claims**

1. In a tufting machine for forming loop or cut pile fabrics including an elongated, rigid support arm; first means on said support arm for engaging a backing material; second means on said support arm for forming successive loop tufts from a continuous length of yarn in the backing material and for cutting said loop tufts when desired; yarn holding means on at least one side of said second means for holding the yarn of at least one previously formed loop against the backing material on said one side of said second means during cutting and/or forming of said loop or cut pile tufts, the improvement comprising:

drive means for operating said second means and said yarn holding means including crank means for operating said second means and camming means for operating said yarn



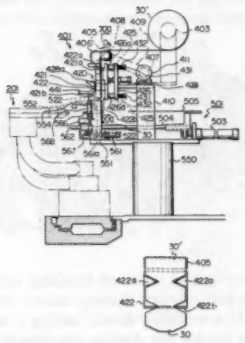
holding means independently of said second means during a predetermined portion of the operation of said second means.

4,267,785

AUTOMATIC APPARATUS FOR FEEDING AND FITTING A GORE PIECE TO THE INSIDE THIGH OPENING OF A STOCKING MATERIAL

Takatori Osho, Nara, Japan, assignor to Takatori Machinery Works Ltd., Japan

Filed May 29, 1980, Ser. No. 154,229
Claims priority, application Japan, Jun. 21, 1979, 54-079525
Int. Cl.³ D05B 21/00
U.S. Cl. 112—121.12 **7 Claims**



1. An automatic apparatus for feeding and fitting a gore piece to the inside thigh opening of a stocking material comprising

a pedestal arranged facing a station on the path of travel of clampers each of which holds a stocking material having an inside thigh opening defined by sliced fringes,

a gore piece feeding assembly arranged on said pedestal, and

a gore piece fitting assembly arranged on said pedestal for cooperation in a prescribed sequence with said feeding assembly;

said gore piece feeding assembly including

a supply source of a material strip,

means arranged on the downstream side of said supply source for intermittently delivering said material strip from said supply source over a length corresponding to each said gore piece per each intermittent movement,

a stationary cutter arranged on the downstream side of said intermittent delivering means and having a cutting surface facing the path of travel of said material strip,

a movable cutter arranged facing said stationary cutter and having on its cutting surface a pair of laterally spaced triangular blades and a transverse straight blade spaced

from said triangular blades along said path of travel of said material strip,

means for estranging said movable cutter always from said stationary cutter, and

means for putting, at a prescribed timing, said movable cutter in smug surface contact with said stationary cutter in order to trim and separate each said gore piece of a prescribed pattern from said material strip per each said surface contact; and

said gore piece fitting assembly including

means arranged facing the path of travel of said gore piece on the downstream side of said cutters for holding by pneumatic suction each said gore piece in the flat state,

a fitting element arranged facing said holding means, and

means for driving, at a prescribed timing, said fitting element for movement in a direction substantially normal to said path of travel of said gore piece in order to fold and fit each said gore piece on said holding means to said inside thigh opening of said stocking material.

4,267,786

LOCK STITCHING AND OVERLOCK STITCHING SEWING MACHINE

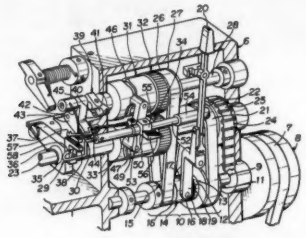
Susumu Hanyu; Noboru Kasuga, both of Hachioji; Kazumasa Hara, Tama, and Koichi Watanabe, Fussa, all of Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Dec. 14, 1977, Ser. No. 860,589

Claims priority, application Japan, Dec. 17, 1976, 51-150749

Int. Cl.[3] D05B *1/14*

U.S. Cl. 112—168 **31 Claims**



1. A lock stitching and overlock stitching sewing machine having a frame and primary driving means, comprising, in combination, a lock stitching device having a stitch forming part including a needle bar driving mechanism for forming lock stitches, said frame with said primary driving means forming an integral part of said lock stitching device; and an overlock stitching device having a stitch forming part spaced apart from said part for forming lock stitches and including a separate needle bar driving mechanism for forming overlock stitches, said overlock stitching device being disconnectably coupled to said lock stitching device, each stitching device having driving pulleys and a cover to selectively shield said pulleys, and further including means for reversing the movement of said primary driving means in response to the change of position of said cover with respect to said pulleys.

4,267,787

CONTROL METHOD FOR A TUFTING MACHINE

Tsutomu Fukuda, 785-1 Kunikane, Kamisocho, Kakogawashi, Japan

Filed Apr. 16, 1980, Ser. No. 140,833

Claims priority, application Japan, Jun. 29, 1979, 54-81341

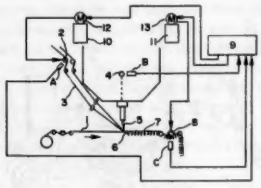
Int. Cl.[3] D05C *15/20*

U.S. Cl. 112—266.2 **1 Claim**

1. A method of controlling a tufting machine comprising:

preestablishing a selected stitch number and a selected yarn feed length for a predetermined unit feed length of ground fabric;

determining stitch number and yarn feed length for the unit feed length of ground fabric by means of measured values respectively obtained from a ground fabric feed detector, a yarn feed detector and a stitch number detector;



comparing the measured values with the preestablished stitch number and the preestablished yarn feed length; and

automatically controlling the rotation speeds of a spiked roller or a yarn roller respectively to correct the ground fabric feed and the yarn feed to the preestablished values whenever the measured values depart from a predetermined tolerance from the selected values.

4,267,788

SELF-STABILIZED ELEVATOR-FLOAT FOR DRYDOCKING OR FLOATING ANY TYPE OF VESSEL

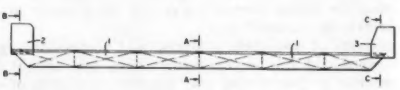
Manuel G. Blanco, c/o Hermanos Paquet, No. 2, 4°, Gijon, Spain

Filed Dec. 27, 1977, Ser. No. 864,525

Claims priority, application Spain, Sep. 14, 1977, 462.374

Int. Cl.[3] B63C *1/02*

U.S. Cl. 114—45 **8 Claims**



1. A self-stabilized float adapted for use with a wharf for dry docking or floating a vessel on a body of fluid and permitting the transfer of the vessel between the body of fluid and the wharf via the float, in the longitudinal and transverse directions of the float, said float comprising:

a main body having at least one ballast tank,

a first pair of hollow, closed towers at one end of said body, supporting means extending laterally from said main body, for securing said towers thereto so as to be laterally offset therefrom,

a second pair of hollow, closed towers at the other end of said body spaced substantially closer together than said first pair of towers and mounted for vertical displacement with respect to said main body, said first and second pairs of towers serving to impart transverse and longitudinal stability to said float,

means for alternatively bailing and flooding said at least one tank to raise or lower said body, said means also bailing and flooding said first pair of towers to maintain the level of fluid therein approximately at the same level as said body of fluid thereby relieving stresses on said supporting means, said second pair of towers being normally free of fluid, and

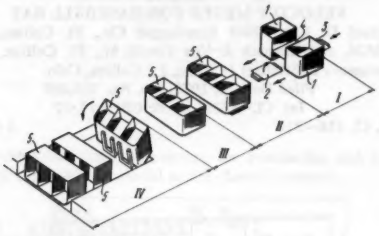
means for selectively flooding and bailing said second pair of towers to lower and raise the same with respect to said main body.

4,267,789

METHOD OF ASSEMBLING MIDDLE BODY OF A VESSEL HULL

Jury P. Ivanov, Grazhdansky prospekt, 92/2, kv. 1; Evgeny A. Evstafiev, ulitsa Karpinskogo, 31, korpus 1, kv. 139, and Alexandr E. Tarasov, Tallinskaya ulitsa, 6a, kv. 23, all of Leningrad, U.S.S.R.

Filed May 12, 1978, Ser. No. 905,466
Claims priority, application U.S.S.R., May 17, 1977, 2528811
Int. Cl.[3] B63B *3/04*
U.S. Cl. 114—65 R 1 Claim



1. A method of assembling middle bodies of vessel hulls for vessels to be used for the transportation of liquid, granular and gaseous cargoes which are formed by a framing extending the width of the vessel hulls and including bottom sections, deck sections, D-type modules and cross bulkheads, comprising:

assembling starboard side and port side D-type modules outside a place of assembly of a middle body of a vessel hull from a set of sections including deck sections, bottom sections, side sections and lengthwise and cross sections;

installing other deck and bottom sections of said set of sections and a cross bulkhead section between a pair of said starboard side and port side D-type modules, outside the place of assembly of the middle body of a vessel hull thereby assembling a complete module that forms framing extending the width of the vessel hull, said assembly including positioning said cross bulkhead and said other deck and bottom sections between starboard side and port side D-type modules, said modules being spaced apart from each other by a distance greater than the width of said cross bulkhead, lifting said cross bulkhead to an elevated horizontal position, tilting said deck and bottom sections to vertical positions and securing same to said elevated cross bulkhead to thereby form a central part of said module, and moving said starboard side and port side D-type modules towards said central part to thereby assemble said complete module;

transferring said complete module to the place of assembly of the middle body of the vessel hull and attaching it to previously assembled and installed modules, said complete module being assembled with the plane of said cross bulkheads in a horizontal position, and said transferring of said assembled complete module including turning said module into a position in which the planes of said cross bulkheads of the assembled complete module and those of previously installed modules extend in parallel with one another.

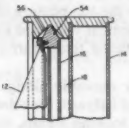
4,267,790

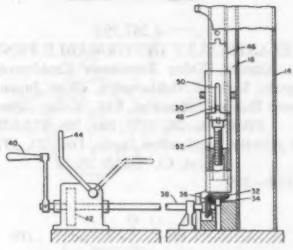
SAIL FURLING AND REEFING APPARATUS

Ralph S. Hood, 2543 Lucille Dr., Fort Lauderdale, Fla. 33316

Filed Apr. 20, 1978, Ser. No. 898,290
Int. Cl.[3] B63H *9/10*
U.S. Cl. 114—106 7 Claims

1. Apparatus for supporting and housing a sail comprising a substantially vertical stayed mast, walls forming a chamber in said mast and a rear facing slot leading from the outside into said chamber, a hollow cylindrical member in said chamber having an outside diameter greater than the width of said slot, means connecting said sail to said cylindrical member and supporting the entire weight of said sail, means for rotating said cylindrical member whereby the sail is drawn into said chamber to furl said sail, said cylindrical member being substantially rigid, extending in said chamber the full vertical





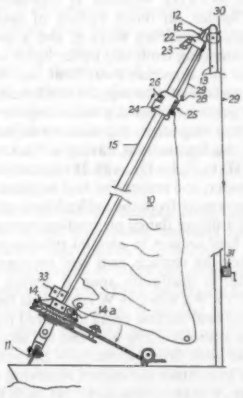
length of said sail, means supporting the weight of said cylindrical member against downward forces applied thereto by said cylindrical member and the weight of said sail only at the base of said cylindrical member independently of said mast, and means at the top of said chamber for supporting said cylindrical member only against forces applied laterally thereto.

4,267,791

JIB ROLLER SYSTEMS

Jean-Pierre Ingouf, 131, rue de la Sante, 75013 Paris, France

Filed Jul. 25, 1979, Ser. No. 60,611
Claims priority, application France, Aug. 4, 1978, 78 23656
Int. Cl.[3] B63H *9/10*
U.S. Cl. 114—106 10 Claims



1. A device for positioning, maintaining, and rolling a headsail on a sailing vessel having a fixed stay adjacent said sail and a halyard for raising said sail, comprising:

(i) tubular mandrel means adapted to rotate on said stay comprising:

a. a plurality of mandrel segments placed end to end along said stay, said segments having an internal bore for receiving said stay and three external grooves disposed

through an arc of not more than 120 degrees with respect to said internal bore;

b. internal sleeve means for interconnecting said segments;

(ii) normally closed locking means disposed at the top of said mandrel means;

(iii) sail attaching means, slidably movable along said mandrel means and attached to the top portion of said sail, for moving into locking engagement with said locking means, said sail attaching means being temporarily connectable with said halyard; and

(iv) releasing means, slidably movable along said mandrel means and attachable to said halyard, for releasing said sail attaching means from said locking means, thereby allowing said sail to be lowered.

4,267,792

ELASTICALLY DEFORMABLE FENDER

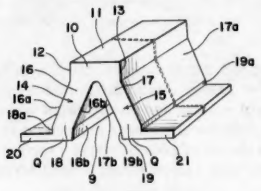
Tamisuke Kimura, Kobe; Tomokazu Kashiwara, and Tetsuo Yamaguchi, both of Nishinomiya, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Kobe, Japan

Filed Dec. 26, 1978, Ser. No. 973,035

Claims priority, application Japan, Dec. 27, 1977, 52-159597

Int. Cl.³ B63B *59/02*

U.S. Cl. 114—219 **3 Claims**



1. An elastically deformable fender adapted to be mounted on one or both of an impact applying element and an impact receiving element for cushioning the impact applied from the impact applying element to the impact receiving element, said fender comprising an elongated body of one-piece construction having a buffer block of substantially rectangular cross section, said buffer block having a thickness within the range of $(0.1\times H)$ to $(0.3\times H)$, wherein H represents the overall height of the fender, an outer surface of said buffer block forming an impact receiving surface, and a pair of opposed support walls extending from said buffer block so as to diverge from each other in a direction away from said buffer block, at least the inner surface of said support walls being bent at their free side edge portions inwardly with respect to each other thereby providing respective leg sections adjacent the buffer block, each of the leg sections having a thickness within the range of $(0.2\times H)$ to $(0.4\times H)$, with H representing the overall height of the fender, and respective heel sections on one side of said leg sections remote from the buffer block, each of said heel sections having a fitting flange protruding outwardly from the corresponding heel section in parallel relation to the plane of said impact receiving surface, said heel sections being spaced from each other a maximum span S within the range of $(0.75\times W)$ to $(1.5\times W)$, wherein W represents the width of said buffer block, said heel section being measured from the boundary between the corresponding heel and leg sections to a plane which is in flush with fitting surfaces of the respective fitting flanges adapted to contact the impact receiving element and is within the range of $(0.15\times H)$ to $(0.4\times H)$, with H representing the overall height of the fender, and wherein the angle of divergence of the support walls is so selected that a plane of any one of the inner and outer surfaces of each of the leg sections, which are opposed to each other across the thickness of the leg section, forms an angle within the range of 55° to 80° relative to the plane which is in flush with fitting surfaces of the respective fitting flanges adapted to contact the impact receiving element, that a plane of any one of inner surfaces of the respective heel sections, which face towards each other, forms an angle within the range of 75° to 90° relative to said plane in flush with the fitting surfaces of the respective fitting flanges while a plane of any one of outer surfaces of the respective heel sections, which are opposite to said inner surfaces of said heel sections, forms an angle within the range of 55° to 90° relative to said plane in flush with the fitting surfaces of the respective fitting flanges.

4,267,793

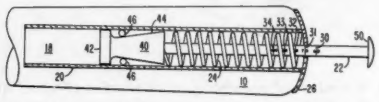
VELOCITY METER FOR BASEBALL BAT

Michael D. Lane, 2005 Huntington Cir., Ft. Collins, Colo. 80526, and Kenneth J. Von Forell, Sr., Ft. Collins, Colo., assignors to Michael D. Lane, Ft. Collins, Colo.

Filed Dec. 26, 1979, Ser. No. 106,699

Int. Cl.³ A63B *69/00;* **G01P** *15/02*

U.S. Cl. 116—324 **5 Claims**



1. A velocity meter comprising:

a baseball bat having a handle, shaped to be grasped by the hands of a user, and a hitting portion continuing away from said handle;

means defining a cavity extending longitudinally inward toward said handle from an outer end of said hitting portion;

an elongated plunger means slidably receivable within said cavity, said plunger means including a tapered plug means rigidly affixed thereto and movable therewith slidably within said cavity;

means for resiliently holding said plunger means within said cavity;

means on the bat coacting with indicating means on said plunger means for indicating the amount of movement of said plunger means outwardly from said cavity as a result of a swinging of said bat by said user;

and means for automatically locking said plug means in the position of maximum amount of movement within said cavity during said swinging, to enable maintaining the indication of said movement following said swinging of said bat.

4,267,794

APPARATUS FOR COATING ARTICLES WITH ENAMEL SLIP

Ferdinand Hartmann, Vienna, Austria, assignor to Austria Email Aktiengesellschaft, Vienna, Austria

Filed Jun. 23, 1980, Ser. No. 161,785

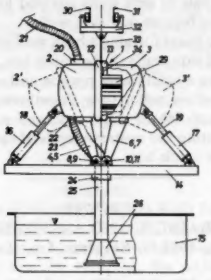
Claims priority, application Austria, Jul. 2, 1979, 4625/79

Int. Cl.³ B05C *9/00, 11/11, 13/00*

U.S. Cl. 118—50 **6 Claims**

1. Apparatus for coating articles, comprising an evacuatable container consisting of two parts, which are movable toward and away from each other and have confronting edges which are covered with respective seals, and an endless conveyor track provided with hanger means for suspending said articles from said track, means for positioning said hanger means whereby to introduce said articles into the open container,

means for moving said parts whereby the seals are operatively associated to tightly grip the hanger means therebetween and



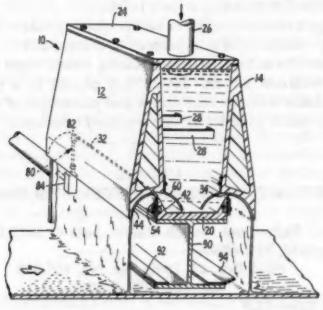
to close said container, and means for evacuating and for supplying the coating material to the closed container.

4,267,795

LIQUID DISTRIBUTING APPARATUS

Imants Reba, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed May 9, 1980, Ser. No. 148,111
Int. Cl.³ B05C *1/04, 3/18, 5/00*
U.S. Cl. 118—302 **6 Claims**



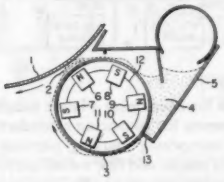
1. Apparatus for uniformly distributing liquid to the surface of a moving web, said apparatus comprising a housing having side walls and a bottom wall, said housing being disposed above said surface and having an interior accommodating said liquid, at least one of said side walls having an upper wall section having a curved bottom end and a lower wall section having a narrow top end, said ends spaced from one another to define an elongated narrow slit extending across said web surface and positioned above said bottom wall, said curved bottom end extending from the housing interior over said narrow top end and at least partially defining a curved liquid deflection surface extending from said elongated narrow slit externally of said housing interior and adapted to direct liquid exiting in a generally horizontal direction from said housing interior through said exit slit downwardly toward said web surface in a thin stream conforming to the dimensions of said elongated narrow slit.

4,267,796

APPARATUS FOR DEVELOPING ELECTROSTATIC LATENT IMAGE

Nin-ichi Kamogawa, and Yoshio Yamazaki, both of Hachioji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,381
Claims priority, application Japan, Apr. 28, 1978, 53/50092
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—658 **3 Claims**



1. In a magnetic brush developing apparatus for use in an electrostatic recording machine for forming a copy of an original and including a rotatably disposed electrostatic latent image carrying member and dispenser means for holding a supply of single-component magnetic developer,

carrying means between said dispenser means and said image carrying member and having a peripheral surface arranged for rotation in a direction opposite the image carrying member for transporting the developer on said peripheral surface from an upstream feed-in zone to a downstream feedback zone through a developing zone therebetween, said developing zone being located adjacent the image carrying member such that at least some of the developer is selectively attracted from the peripheral surface developing zone to the image carrying member in accordance with an electrostatic image pattern of the original impressed thereon, and

magnetic means stationarily disposed with respect to said carrying means for forming magnetic fields of adjacently alternating polarities on said peripheral surface to attract the developer for transport from the dispensing means and to and through said developing zone as said peripheral surface is rotated,

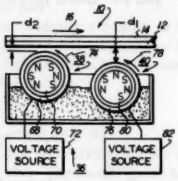
the magnetic field at said developing zone being stronger than the fields at said feed-in and feedback zones, and the magnetic fields at said feed-in and feedback zones being unequal in strength so as to offset the concentration point of the composite magnetic field density on said carrying means peripheral surface away from said developing zone adjacent the image carrying member, said offset being effective to prevent the accumulation on said image carrying member of excess developer transported on said peripheral surface to the developing zone and not attracted to the image carrying member for forming a toner image thereon in accordance with the image pattern of the original, whereby said excess developer is attracted to said peripheral surface at said offset magnetic field density concentration point remote from said image carrying member, the attraction of excess developer away from said image carrying member resulting in the creation of a notably sharpened toner image on the image carrying member.

4,267,797

DEVELOPMENT SYSTEM

Raymond W. Huggins, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 27, 1979, Ser. No. 34,095
Int. Cl.[3] G03G *15/09*
U.S. Cl. 118—658 32 Claims



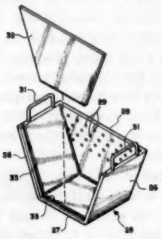
1. An apparatus for developing a latent image, including:
first magnetic means for advancing a conductive developer composition comprising marking particles into contact with the latent image, said first means interacting with the developer composition causing the developer composition to have a first conductivity so as to optimize development of solid areas within the latent image with the marking particles; and
second magnetic means, spaced from said first means, for advancing the developer composition into contact with the latent image, said second means interacting with the developer composition causing the developer composition to have a second conductivity lower than the first conductivity so as to optimize development of lines within the latent image with the marking particles.

4,267,798

METHOD AND APPARATUS FOR RAISING PLANT AND ANIMAL LIFE IN A MARINE ENVIRONMENT

Arthur H. Collins, Rte. 1, Artesian Rd., Eagle, Id. 83616

Filed Dec. 26, 1978, Ser. No. 973,089
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—3 8 Claims



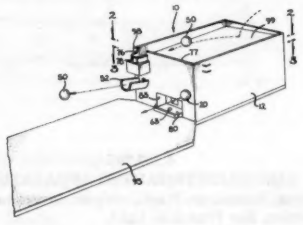
1. Apparatus for raising plant and animal life in a marine environment comprising
an elongate raceway through which water is flowed, said raceway including a bottom and side walls extending upwardly from opposite sides of said bottom, an inlet end wall and an outlet end wall;
a source of heated water;
means for supplying heated water from said source to the inlet end of said raceway;
a partition extending across the raceway, said partition providing a solid barrier across the raceway at an upper portion thereof and being perforated at a lower portion thereof;
a discharge pipe extending upwardly in the raceway to a height just below the uppermost edges of the side walls and partition; and
a catch box in the raceway, said catch box including a bottom and a pair of side walls adapted to fit snugly within the raceway bottom and side walls,
a downstream panel forming a back wall interconnecting the bottom and side walls of the catch box, said downstream panel having a solid lower portion and a perforated upper portion to allow water flow therethrough and to restrict movement of fish therethrough, and a removable panel interconnecting the upstream ends of the bottom and side walls of the catch box.

4,267,799

ANIMAL TRAINING AND AMUSEMENT DEVICE

Roger C. Bacon, 1042 N. Sweetzer Ave., Los Angeles, Calif. 90069

Filed Nov. 1, 1979, Ser. No. 90,489
Int. Cl.[3] A01K *15/02*
U.S. Cl. 119—29 36 Claims



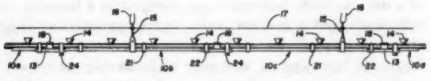
36. An animal training and amusement device, comprising:
a means for projecting an object through the air away from the device;
a means for releasing a food pellet;
a trigger means coupled to said projecting means for triggering operation of said projecting means; and
a means for activating said releasing means when said object is returned to said device and placed in a preselected position wherein said return and placement of said object also resets said device for repeated operation.

4,267,800

SUSPENDED WATERING SYSTEM FOR POULTRY HOUSE

Morris C. Keller, and Francis Rustin, both of 2615 College St., Springfield, Mo. 65806

Filed Feb. 27, 1980, Ser. No. 125,205
Int. Cl.[3] A01K *7/00*
U.S. Cl. 119—72.5 12 Claims



7. In a watering system, for suspension from overhead supports, the improvement comprising
a continuous line of flexible pipe consisting of a plurality of pipe sections coupled in end-to-end relation by pipe couplings; and an associated stiffening support system consisting of elongated support bars disposed contiguous to, and being substantially coextensive in length with, said pipe sections, and bridging bars disposed contiguous to and overlapping adjacent support bars and bridging said couplings; and clamp means disposed at selected intervals for clamping together said pipe, said support bars and said

bridging bars at each side of a pipe coupling, and for clamping together said support bars and pipe sections intermediate said pipe couplings;

said support bars and bridging bars being elongated rigid members having a V-shaped cross section; the channels of said support bars being disposed in nesting relation with said pipe sections; and said bridging bars being disposed in nesting relation with said support bars;

and a plurality of animal operated drinker devices mounted on said pipe sections in longitudinally spaced relation, to be supplied by said pipe.

4,267,801

CIRCULATING FLUIDIZED BED BOILER

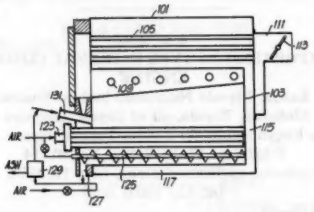
Edwin Robinson, Darlington, England, assignor to Deborah Fluidised Combustion Limited, Peterlee, England

Filed May 30, 1979, Ser. No. 43,880

Claims priority, application United Kingdom, May 31, 1978, 25698/78

Int. Cl.³ B09B 3/00

U.S. Cl. 122—4 D **8 Claims**



1. A boiler comprising fuel burning means and means allowing heat exchange between the products of combustion of the fuel and a working fluid, the fuel burning means including a substantially cylindrical housing for accommodating a bed of particulate material, air distributors located within the housing so as to be surrounded by bed material, said air distributors effecting fluidisation of the bed material, said air distributors extending longitudinally of and being spaced from the housing and comprising first and second air distributors arranged on opposite sides of a vertical longitudinal plane through the bed and on each side extending substantially circumferentially with respect to the axis of the housing, and means for feeding air to the air distributors to effect circulation of the bed material in two zones on said opposite sides of said vertical longitudinal plane.

4,267,802

FUEL VAPORIZATION AND DELIVERY SYSTEM

Delmar J. Garretson, Mineral Springs, Ark., assignor to Gordon O. Dodson, Texarkana, Ark.

Filed Sep. 21, 1978, Ser. No. 944,334

Int. Cl.³ F02M 31/00

U.S. Cl. 123—523 **4 Claims**

1. A fuel vaporization and delivery system for an internal combustion engine, comprising:

a vaporizing chamber having a first air inlet and a mixture outlet and further comprising

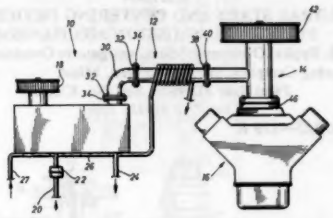
a reservoir for storing a quantity of fuel wherein said first air inlet is positioned for providing for the passage of incoming air over said reservoir,

a jet nozzle within said chamber and communicating with a source of pressurized fuel, for spraying fuel into said air and supplying fuel to said reservoir, the passage of air over said reservoir and the spraying of said fuel producing a fuel and air mixture,

a first baffle disposed within said chamber between said first air inlet and said nozzle, and

a second baffle disposed within said chamber between said nozzle and said outlet, said baffles adapted to produce a swirling motion in said mixture, thereby promoting the vaporization of said fuel;

a metering device having a second air inlet for providing additional air to said mixture, the metering device communicating with said chamber and with said engine for controlling the amount of said mixture supplied to said engine; and



an intermediate vapor expander including a heated region positioned between and in communication with said mixture outlet of said vaporizing chamber and said metering device for further vaporizing the fuel and air vapor mixture between the vaporizing chamber and the metering device.

4,267,803

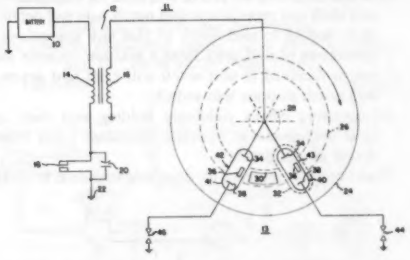
DISCHARGE DEVICE IGNITION SYSTEM

Richard A. Formato, 17 Red Coat Rd., Shrewsbury, Mass. 01545, assignor to Richard A. Formato, Shrewsbury, Mass. and Theodore P. Zoli, Jr., Glens Falls, N.Y.

Filed Jun. 14, 1979, Ser. No. 48,673

Int. Cl.³ F02P 7/00

U.S. Cl. 123—146.5 A **38 Claims**



35. An ignition system for a multi-cylinder engine having a distributor shaft for timing the ignition, and a plurality of spark plugs, comprising:

a first member, rotatable with said shaft;

a second member, independent of said first member and rotatable with said shaft;

means responsive to said first member, for periodically producing a high voltage signal for firing the spark plugs;

a discharge device including a pair of spaced electrodes in a sealed chamber interconnected between the means for producing a high voltage signal and each spark plug and incapable of conducting in response only to the high voltage signal;

a source of energy for producing seed ionization within said discharge device; and

means, responsive to said second member and independent of said means for producing a high voltage signal for firing the spark plugs, for periodically selectively applying said energy to each said discharge device to produce seed ionization therein and enable said discharge device to

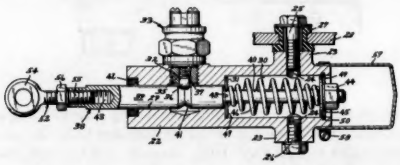
conduct a high voltage signal for firing the associated spark plug.

4,267,804

NEUTRAL START AND CENTERING DEVICE FOR POWER TRANSMISSION MECHANISM

Dann B. Rypka, Owatonna, Minn., assignor to Owatonna Manufacturing Company, Inc., Owatonna, Minn.

Filed Jan. 31, 1978, Ser. No. 873,897
Int. Cl.[2] H01H 3/00
U.S. Cl. 123—179 K **6 Claims**



1. In combination with an engine having a starting motor, a fluid pump operated by said engine, and a control lever for said pump and movable between a neutral position and spaced forward and reverse pump operative positions;

(a) fixed housing means defining a bore;

(b) a shaft extending axially through said bore and axially movable therein, said shaft having a transverse notch disposed within said bore;

(c) a switch for said starting motor mounted on said housing and having an operating stem extending in a direction transversely of said bore;

(d) a ball detent on the end of said stem for engagement with said shaft and reception in said notch, said ball detent sized with respect to said notch so that any appreciable axial movement of said shaft from a position wherein said detent is received in said notch will eject said detent from said notch to open said switch;

(e) centering means yieldingly holding said shaft against axial movements in opposite directions away from said detent in said notch;

(f) and connector means for attaching said shaft to said lever.

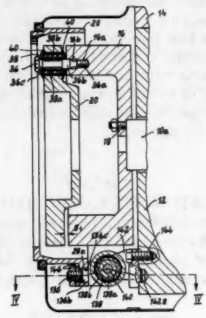
4,267,805

INTERNAL COMBUSTION ENGINE

Johann Schmuck, Bad Feilnbach, Fed. Rep. of Germany, assignor to Motorenfabrik Hatz GmbH & Co. KG, Ruhstorf, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 42,929
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825177
Int. Cl.[3] F02B 77/00
U.S. Cl. 123—198 E **7 Claims**

1. In an internal combustion engine comprising a crankshaft rotatably supported in an engine housing, a flywheel mounted on said crankshaft, an aggregate housing surrounding said flywheel and mounted on said engine housing by fastening means, a drive shaft for an aggregate rotatably journaled in said aggregate housing, and means for drivingly connecting said flywheel to said drive shaft, the improvement comprising wherein said fastening means comprises damping means for damping vibrations between said internal combustion engine and said aggregate housing, which damping means comprise at



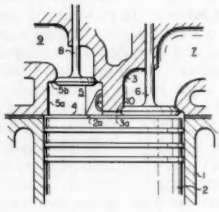
least one elongate elastic buffer element extending tangentially with respect to said flywheel.

4,267,806

HIGH COMPRESSION TYPE INTERNAL COMBUSTION ENGINE

Mutsumi Kanda; Kiyoshi Nakanishi, both of Susono, and Katsuhiko Motosugi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Apr. 17, 1979, Ser. No. 30,864
Claims priority, application Japan, May 12, 1978, 53-5586
Int. Cl.[3] F02B 3/00
U.S. Cl. 123—287 **10 Claims**



1. An internal combustion engine comprising:

a cylinder block having a cylinder bore therein;

a piston reciprocally movable in said cylinder bore and having a flat top face;

a cylinder head having a circular inner wall portion covering the cylinder bore and comprising a flat portion substantially parallel to the top face of the piston and a recessed portion which is arranged adjacent to the periphery of said inner wall and has a circumferential wall and a top wall, said flat portion being arranged at a position close to the flat top face of said piston when the latter is positioned at top dead center for forming a squish area therebetween, said piston and said circular inner wall portion of said cylinder head forming a combustion chamber therebetween;

an intake valve arranged on said flat portion and having a valve head which has a front face exposed to said combustion chamber, the front face of said valve head being approximately coplanar with said flat portion;

an exhaust valve arranged on the top wall of said recessed portion and having a valve head;

a groove formed in said flat portion and extending from the valve head of said intake valve to said recessed portion, said groove having an approximately uniform depth which is slightly larger than the clearance between said

flat portion and the flat top face of said piston when the latter is positioned at top dead center;

a depression formed in said groove adjacent to and opening into said recessed portion, said depression having a flat inner wall which is inclined downwardly and slightly towards said recessed portion with respect to a plane parallel to the axis of the cylinder bore and passing through the centers of said intake and exhaust valve heads; and

a spark plug arranged in a bore in said inclined wall of the depression in said groove and having a spark gap located approximately on the axis of the cylinder bore, so that the flame propagation distances to the most remote surfaces of the circumferential walls of the recessed portion are minimized.

4,267,807

INTERNAL COMBUSTION ENGINES

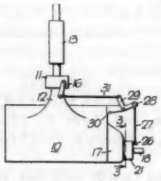
Herbert E. Ashfield, Huddersfield, England, assignor to David Brown Tractors Limited, Huddersfield, England

Filed Jul. 6, 1979, Ser. No. 55,215

Claims priority, application United Kingdom, Jul. 13, 1978, 29719/78

Int. Cl.³ F02D *9/06, 7/00*

U.S. Cl. 123—323 **7 Claims**



1. An internal combustion engine provided with means for automatically preventing overspeeding of the engine, said means including an exhaust brake associated with the engine, and a servo system operatively connected between the output side of the engine and the exhaust brake and comprising a mechanical device which remains completely inoperative unless the engine speed exceeds a predetermined value, whereupon said device moves rapidly through a limited distance to apply the exhaust brake suddenly and fully.

4,267,808

CENTRIFUGAL RPM GOVERNOR FOR FUEL INJECTED ENGINES

Ilija Djordjevic, and Ernst Ritter, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

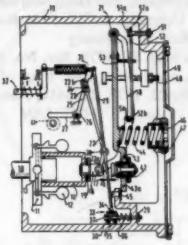
Filed Jun. 21, 1979, Ser. No. 50,582

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855889

Int. Cl.³ F02D *1/04*

U.S. Cl. 123—367 **4 Claims**

1. A centrifugal rpm governor for fuel injected internal combustion engines including a housing, comprising an intermediate lever which is coupled with a supply quantity adjustment member of an injection pump which is engaged by both a control member moved by means of flyweights in accordance with rpm and a setting member which is pivotable for the purpose of arbitrary variation of the supply quantity, said governor further including a support member which contacts a stop attached to the housing under a prestressing force of a main control spring, said control member coming into effective contact with said support member after covering an idling sleeve path against the force of an idling spring, further wherein both said setting member and said control member are connected by a shift lever and are articulated via said shift lever on said intermediate lever, said shift lever includes opposite end portions, one end of said end portions being connected to said control member and the opposite end portion being connected with said setting member, said shift lever further being pivotably connected to said intermediate lever; said



intermediate lever further provided with a pivotal bearing which is adjustable within the governor housing in a direction parallel with the movement of said control member for the purpose of accomplishing the basic setting of the full-load supply quantity.

4,267,809

EXHAUST GAS RECIRCULATION CONTROL SYSTEM

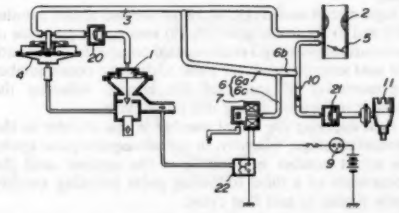
Yasushi Mase, and Toshikazu Okamura, both of Tokyo, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 4, 1979, Ser. No. 45,410

Claims priority, application Japan, Jul. 5, 1978, 53-80944

Int. Cl.³ F02B *47/08;* **F02P** *5/00*

U.S. Cl. 123—409 **4 Claims**



1. In an exhaust gas recirculation control system including a negative pressure passage for introducing intake negative pressure in the proximity of a throttle valve of a carburetor into an exhaust gas recirculation control valve, which control valve is constructed to open when said intake negative pressure is applied thereto, and an advance negative pressure passage for introducing the intake negative pressure in the proximity of the throttle valve of the carburetor into a distributor, the improvement comprising positive pressure delay valves provided in said negative pressure and advance negative pressure passages, respectively, said delay valves each comprising a bypass orifice and a check valve, said delay valves connected in said passages for permitting flow through said check valve from said control valve and said distributor, respectively, to said intake negative pressure.

4,267,810

CONTROL SYSTEM FOR CONTROL OF REPETITIVE EVENTS, E.G. IGNITION, FUEL INJECTION, IN INTERNAL COMBUSTION ENGINES

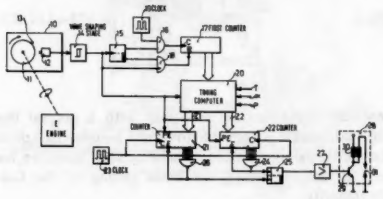
Jürgen Wesemeyer, Nuremberg; Georg Haubner, Berg; Werner Meier, Rednitzhembach, and Hans Schrumpf, Oberasbach, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,360

Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824981; Aug. 22, 1978, 2836614; Nov. 28, 1978, 2851336

Int. Cl.[3] F02P 5/04

U.S. Cl. 123—416 17 Claims



1. System to control the operation of repetitive events in cylinder-piston type internal combustion engines having

a transducer (10, 40) coupled to the crankshaft of the engine;

at least one output stage (27, 28) including a controlled switch (29) connected to and controlling the respective event;

and an electronic computing stage (20, 43) connected to and controlled by the transducer and furnishing output signals to the output stage for control of the controlled switch (29) in accordance with processed information supplied to the computing stage by the transducer,

wherein, in accordance with the invention,

the transducer (10, 40) is of the type which provides a single needle, or sharp output pulse when a piston of the engine moves towards top dead center (TDC) position;

and the system comprises

a clock frequency generator (19) producing clock pulses at a fixed, predetermined rate;

a counter (17) connected to said generator to count at said rate;

and logic circuit means (15, 16, 18) connected to said counter (17) and to the transducer (10, 40) sensing the presence of a transducer pulse and enabling said counter to count until the next sensed transducer pulse to derive a count number representative of speed of the engine, whereby the counter will count during one pulse cycle,

and then applying the count number in the counter to the computing stage, whereby, in the subsequent pulse cycle, the count number is available at the counter until the occurrence of a third following pulse initiating another cycle similar to said first cycle.

4,267,811

CYLINDER HEAD FOR A MIXTURE-COMPRESSING INTERNAL COMBUSTION ENGINE

Willi Springer, Göppingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

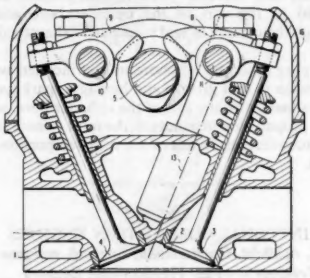
Filed Feb. 27, 1979, Ser. No. 15,616

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809157

Int. Cl.[3] F02B 15/00; F01L 1/02

U.S. Cl. 123—432 5 Claims

1. A cylinder head for a mixture-compressing internal combustion engine having a relatively small cylinder diameter, with a V-arrangement of two inlet valve means and of two exhaust valve means which are actuated by way of rocker arm means from a cam shaft means, comprising a single cam shaft extending with a longitudinal axis located between said valve means, characterized in that the rocker arm means are so supported that a spark plug having a substantially central orifice of its spark plug bore is so arranged in the combination



chamber that the center longitudinal axis through the spark plug extends at least approximately parallel to one of said valve means in a plane normal to said cam shaft longitudinal axis, and further being located between said one valve means and the cam shaft means.

4,267,812

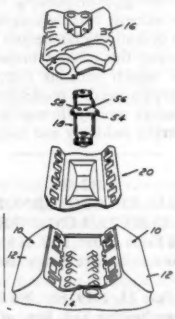
ENGINE EGR COOLER

Howard A. Aula, and Jerry L. Mauch, both of Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1979, Ser. No. 83,014

Int. Cl.[3] F02B 47/08

U.S. Cl. 123—570 6 Claims



1. An engine exhaust gas recirculation (EGR) cooler for use in an internal combustion engine having an engine intake manifold, the intake manifold including passages therein defining an exhaust gas recirculation (EGR) system, the cooler comprising, a flat sandwich type casing mounted contiguous to the manifold and connected to both the engine coolant system and to the EGR system for cooling of the EGR gases by engine coolant, the casing being of tubular oblong shape connected at opposite ends to engine coolant passages in the manifold, and an essentially U-shaped tube mounted within the casing surrounded by coolant and having the open pair of end portions of the tube connected one to the EGR system to constitute an inlet for receiving EGR gases therein and the other connected to the EGR system to constitute an outlet for the discharge therefrom of the exhaust gases cooled by heat transfer to the coolant.

4,267,813
IGNITION SYSTEM WITH AUTOMATIC INCREASE IN IGNITION ENERGY DURING ACCELERATION

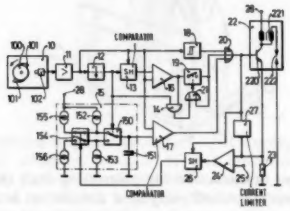
Gerd Hohne, Ludwigsburg, and Gerhard Sohner, Remshalden, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,509

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1978, 2812291

Int. Cl.³ F02P *3/04*

U.S. Cl. 123—609 **10 Claims**



1. In an internal combustion engine having a rotating member **(100)**, means **(221, 222)** for producing a spark upon interruption of current therethrough, ignition switch means **(220)** connected to said spark producing means and having a first and second stable state for, respectively, allowing and blocking current flow through said spark producing means, and switch control means for maintaining said ignition switch means in said first state for a desired closure angle of rotation of said rotating member immediately preceding said production of said spark, the improvement comprising

means **(12, 13, 14, 16)** for furnishing an acceleration signal upon acceleration of said rotating member, said means comprising,

means for furnishing cyclically recurring speed signals each indicative of the rotational speed of said member, and means **(16)** for comparing sequential ones of said speed signals to each other and furnishing said acceleration signal when the difference between so-compared signals exceeds a predetermined difference; and

means **(19, 20, 21)** connected to said acceleration signal furnishing means for abruptly increasing said desired closure angle to an increased closure angle in response to said acceleration signal, whereby sufficient energy for producing a spark is available in said spark producing means even during acceleration of said engine.

4,267,814
ABRASIVE SAW BLADE FOR TRAPEZOIDAL GROOVING

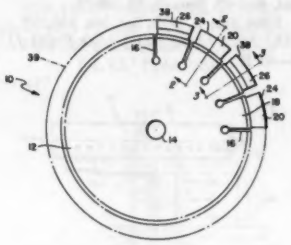
Donald H. Benson, Spencerport, N.Y., and Larry Mosher, Lebanon, Tenn., assignors to Federal-Mogul Corporation, Detroit, Mich.

Filed Dec. 6, 1979, Ser. No. 101,045

Int. Cl.³ B28D *1/04*

U.S. Cl. 125—15 **13 Claims**

1. A saw blade for producing a trapezoidal-shaped groove in a surface comprising: a circular support disc and a plurality of spaced-apart abrasive elements supported about the periphery of said support disc, said abrasive elements including a first set of a generally rectangular cross sectional configuration having a flat, work-engaging end surface of a predetermined width and a second set of a generally trapezoidal cross sectional configuration having a work-engaging end surface and sloping



work-engaging side surfaces defining a maximum width greater than the width of said first set of abrasive elements.

4,267,815
THERMAL CUT-OUT FOR GAS-HEATED GLASS CERAMIC COOKING SURFACES

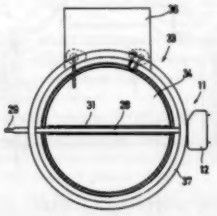
Gerhard Gössler, Oberderdingen, Fed. Rep. of Germany, assignor to E.G.O. Elektro-Gerate Blanc u. Fischer, Oberderdingen, Fed. Rep. of Germany

Filed Aug. 28, 1979, Ser. No. 70,451

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1978, 7826549[U]

Int. Cl.³ F24C *3/04*; H01H *37/48*

U.S. Cl. 126—39 G **14 Claims**



7. A thermal cut-out for gas-heated glass ceramic cooking surfaces, comprising:

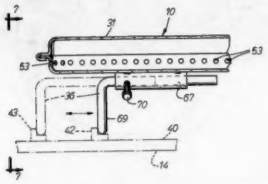
a switch housing;

a snap switch arranged in the housing;

a temperature sensor extending from the switch housing and cooperating with the snap switch, the temperature sensor comprising a tube with a rod arranged therein, the tube and at least one portion of the length of the rod having differing coefficients of thermal expansion, the tube and the rod being connected to one another at their ends opposite the housing; and,

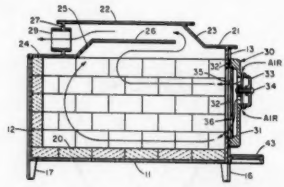
an enveloping tube surrounding the temperature sensor at a distance therefrom defining an insulating space therebetween, whereby the temperature sensor is insulated from the direct thermal and corrosive effects of burning gas, and instead, experiences a clean, even thermal distribution throughout its length.

4,267,816
UNIVERSAL BURNER ELEMENT FOR A GAS BARBECUE GRILL
Walter Koziol, Box 97, Russell, Ill. 60075
Filed Sep. 7, 1978, Ser. No. 940,215
Int. Cl.³ A47J *37/00*; F23Q *9/00*; F16M *11/38*
U.S. Cl. 126—41 R **13 Claims**



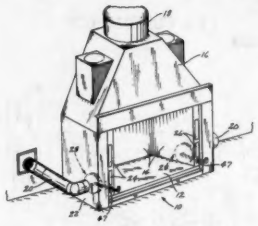
1. A burner element for a gas barbecue grill comprising:
a hollow body member defining a central portion and at least two extending arm portions;
a plurality of apertures distributed over said body member;
an intake member in fluid communication with said hollow body member and extending in a given direction;
a leg member defined by a longitudinal and angular portion and longitudinally extendable from each said arm portion and in a direction generally transverse of said intake member; and means to adjustably secure said leg member in said arm portion in both a longitudinal and transverse manner.

4,267,817
WOOD-BURNING STOVE
Arthur W. Hicks, Warner, N.H., and Gerald D. Jolicoeur, P.O. Box 292, Warner, N.H. 03278, assignors to Gerald D. Jolicoeur, Belmont, N.H.
Filed Mar. 23, 1978, Ser. No. 889,237
Int. Cl.³ F24C *1/00*
U.S. Cl. 126—60 **3 Claims**



1. A wood stove comprising: a generally rectangular firebox airtight except for a door and an exhaust pipe for products of combustion; a door having an adjustable air inlet passageway, said door being hinged to the vertical front face of said firebox and being adapted when open to admit solid fuel and when closed to admit combustion air in a regulated amount through said air inlet passageway which is the only source of combustion air when said door is closed; a baffle plate extending from the top of the rear wall of said firebox below said exhaust pipe forward towards said front face, leaving a passageway therebetween for products of combustion to flow up and over said baffle plate to said exhaust pipe; said baffle plate extending rearwardly below and beyond said exhaust pipe forming a horizontal back shelf, and a vertical rear plate set back from said rear wall and connecting said horizontal back shelf and said top, said exhaust pipe being located in said vertical rear plate and the set back of said vertical rear plate from said rear wall being sufficient to permit a right angle flue pipe to be connected to said exhaust pipe without said flue pipe intersecting the plane of said rear wall.

4,267,818
DAMPER CONSTRUCTION
Edwin E. Taylor, New London, Iowa, assignor to Vega Industries, Inc., Des Moines, Iowa
Filed Jun. 25, 1979, Ser. No. 51,527
Int. Cl.³ F24B *7/00*
U.S. Cl. 126—121 **14 Claims**



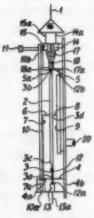
1. A damper construction for controlling draft through an opening of predetermined peripheral dimensions in a heating appliance structure, said damper construction comprising, in combination:
(a) a first, rigid disc member having peripheral dimensions smaller than said predetermined dimensions;
(b) a second, rigid disc member having peripheral dimensions larger than said predetermined dimensions;
(c) a flexible disc member having peripheral dimensions larger than said predetermined dimensions;
(d) an operating rod passing through an opening in all three of said disc members to carry the latter in superposed relation in closely parallel planes with said flexible disc member between said first and second rigid disc members and wherein said apertures are of larger cross sectional dimension than the portion of said rod upon which said disc members are carried, whereby said disc members are loosely carried by said rod to allow radial variation in the relation of said superposed planes and the axis of said rod; and
(e) means for mounting said rod for selective movement between a first position, wherein said first disc member is positioned within said opening and said flexible disc member contacts the structure defining said opening about the periphery thereof, and a second position, wherein all of said disc members are spaced from the structure defining said opening to allow gaseous flow therethrough.

4,267,819
DEVICE FOR GENERATING AN ELECTRIC OUTPUT SIGNAL IN RESPONSE TO THE POSITIONING OF A MECHANICAL MEMBER
Per-Göran Claesson, Österhagens gard, 142 00 Trangsund, Sweden
Filed Jul. 10, 1979, Ser. No. 56,338
Claims priority, application Sweden, Jul. 19, 1978, 7808001
Int. Cl.³ F23L *11/00*; F23N *3/02*
U.S. Cl. 126—285 B **8 Claims**

1. Apparatus for controlling the draft in an oil-fired boiler unit, comprising:
a valve for controlling the flow of air through the boiler;
a diaphragm operatively connected to the boiler such that its position is responsive to the pressure in the boiler;
a movably mounted elongate strip connected to said diaphragm for movement therewith;
a spring biasing said elongate strip away from said diaphragm;
a first optical fiber disposed on said elongate strip;
a source of illumination provided at one end of said first optical fiber;
at least two additional optical fibers spaced from one another and disposed adjacent the other end of said first optical

fiber such that the amount of light from said source of illumination that is transmitted to each of said additional optical fibers by said first optical fiber is dependent upon the position of said elongate strip;

at least two phototransistors connected in series and respectively disposed adjacent said additional optical fibers to receive light transmitted thereby;



an operational amplifier having an input terminal connected to the common junction of said phototransistors, to thereby provide compensation for ambient light and temperature conditions, and providing an output signal related to the position of said elongate strip; and

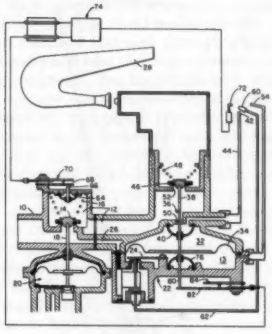
a regulating circuit responsive to the output signal from said operational amplifier to control the position of said valve.

4,267,820

CONTROL MECHANISM FOR A GAS-FIRED WATER HEATER

Jean-Claude Charron, Saint Maur, France, assignor to Saunier Duval, Rueil Malmaison, France

Filed Oct. 27, 1978, Ser. No. 955,254
Claims priority, application France, Oct. 28, 1977, 77 32668
Int. Cl.³ F24H *1/10*
U.S. Cl. 126—351 **8 Claims**



1. A gas-fired hot water heater adapted to operate without a permanent pilot comprising

an igniter pilot,

a main gas inlet chamber for providing gas to said igniter pilot,

a safety pilot,

a secondary gas inlet chamber for providing gas to said safety pilot,

an igniter for said igniter pilot,

a flame detector disposed adjacent and responsive to at least the igniter pilot,

means responsive to said flame detector for admitting gas into said secondary chamber, and

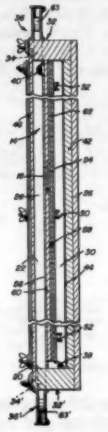
switching means responsive to the pressures of gas in said main chamber and said secondary chamber for energizing said igniter when sufficient gas pressure exists in said main chamber and for deenergizing said igniter whenever there is at least a minimum pressure in said secondary chamber.

4,267,821

SOLAR ENERGY COLLECTOR

Cecil O. Nelson, 6324 Parsifal Pl., Las Vegas, Nev. 89107

Filed Jul. 5, 1978, Ser. No. 922,364
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—417 **1 Claim**



1. A solar energy collector, comprising, in combination:

(a) a housing forming a receptacle;

(b) heat absorbing mat means disposed within the receptacle for absorbing solar energy;

(c) fluid flow path means passing through the heat absorbing mat means for permitting a fluid medium to pass through the mat means and collect heat energy stored within the mat means, wherein the heat absorbing mat means includes, in combination:

(1) a first planar sheet constructed from a rigid material impervious to a fluid medium passing through the mat means;

(2) a second planar sheet arranged substantially parallel to and coextensive with, but spaced from, the first planar sheet, and constructed from a material having a high heat absorbing capacity; and

(3) a planar fluid absorbing layer disposed between the first planar sheet and second planar sheet and permitting passage of the fluid medium therethrough between the first planar sheet and second planar sheet;

said housing, and the receptacle formed thereby, are in the form of a rectangular parallelpiped having an open top and including a substantially planar bottom wall, with the first planar sheet being arranged substantially parallel to, but spaced from, the bottom wall of the housing and bisecting the receptacle into a pair of chambers, the one of the chambers being disposed between the heat absorbing mat means and the open top of the housing being usable for removing excess heat from the housing, and the other of the chambers being usable for heating a fluid medium for space heating purposes, said housing further including a pair of substantially parallel, spaced side walls, and a pair of headers positioned between said side walls and forming opposite ends of said housing, with the first planar sheet extending between the side walls and from one of the headers to adjacent, but spaced from, the other of the headers, a trough being provided in the housing and arranged connected to and extending between the first planar sheet and the other of the headers, the trough

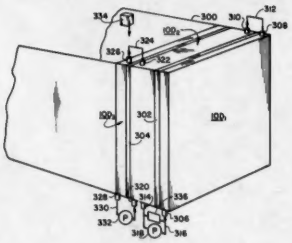
extending transversely of the extent of the first planar sheet and being provided with a drain, and a liquid source disposed in the mat means arranged extending between the side walls of the housing, with the fluid absorbing layer of the mat means being coextensive with the first planar sheet between the headers, but spaced from the side walls of the housing.

4,267,822

INTEGRATED SOLAR ENERGY SYSTEM

Edward H. Diamond, East Moriches, N.Y., assignor to Grumman Energy Systems, Inc., Bohemia, N.Y.

Filed Nov. 8, 1978, Ser. No. 958,783
Int. Cl.³ F24J 3/02
U.S. Cl. 126—417 **4 Claims**



1. A solar collector module comprising a cast concrete body, a recess in the upper surface of said body, a plate transparent to solar radiation covering said recess in a sealed relationship therewith, the floor and walls of said recess with said transparent plate defining a hermetic chamber in said body, a pattern of labyrinthine interconnected channels in the floor of said recess, a perforated metal absorber plate on said floor overlying said channels, at least some of the perforations in said absorber plate being aligned with said channels, said metal plate absorbing solar energy passing through said transparent plate, an inlet port opening into said hermetic chamber, an outlet port opening on said channels, said ports communicating with the outside of said module, whereby the circulation of fluid through said inlet into said chamber and through said perforations in said metal plate imparts heat to said fluid when said metal plate is absorbing solar energy such that, when said heated fluid passes into said channels and out said outlet port, said heat is transferred outside of said module for utilization.

4,267,823

SOLAR COLLECTOR WITH LENS ARRAY

Armin Bohg, Neuweiler, and Marian Briska, Boeblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

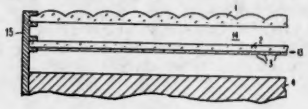
Filed Jul. 19, 1979, Ser. No. 59,017
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842400
Int. Cl.³ F24J 3/02
U.S. Cl. 126—422 **1 Claim**

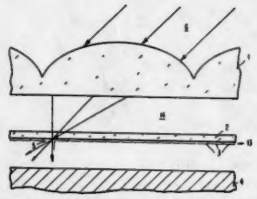
1. A solar collector having a light incidence surface formed by a lens array which focuses radiation onto a translucent sheet positioned in the focal plane of said lenses and having a refractive index adapted to the lens radius of said array;

a solar absorber mounted essentially parallel to said translucent sheet and on the opposite side of said translucent sheet from said lens array;

said translucent sheet having mounted on the surface thereof adjacent to said absorber a plurality of the order of 100 per each lens of said lens array, of bimetallic scales consisting of a short 1.3 micrometer thick copper member laminated with a longer 1.0 micrometer thick aluminum member;

each said bimetallic scale serving as a solar energy responsive radiation passage location, each said bimetallic scale further having a reflective coating for solar energy on the surface thereof adjacent to said absorber; and





a radiation transmitting cooling medium having a refractive index coinciding with the refractive index of said lens array of said sheet flowing between said sheet and said absorber.

4,267,824

SOLAR CONCENTRATOR

John T. O'Halloran, Glendale, Mo., assignor to Hayakawa Associates, St. Louis, Mo.

Filed Jul. 30, 1979, Ser. No. 61,620
Int. Cl.³ F24J 3/02
U.S. Cl. 126—426 **10 Claims**

1. An inflatable solar concentrator comprising an elongate hollow member of relatively thin flexible material inflatable to an upright position in which it is generally in the form of a cone convergent from its upper to its lower end, said inflated member having a substantially transparent top closing its upper end of a material adapted to transmit incident solar radiant energy, and a highly reflective inner conical surface for reflecting downwardly and thereby concentrating said radiant energy, a rigid collar around the lower end of the member, a passage in communication with the interior of said member for supply of gas under pressure into the member to inflate it, and means for mounting the member with its lower end above a heat absorbing surface for impingement on the surface of concentrated

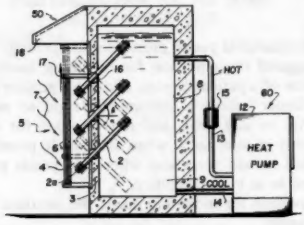
solar radiant energy, said mounting means being adapted for mounting said member with its lower end and said collar thereon spaced above said heat absorbing surface, said solar concentrator further comprising a flexible connector having a highly reflective inner surface connecting said collar and the heat absorbing surface and forming a passage therebetween for passage of said concentrated radiant energy, said mounting means being operable for swinging said member with respect to said heat transfer surface about an axis generally perpendicular to the central longitudinal axis of the member at the lower end thereof for allowing the member to track the path of the sun, said connector being adapted to flex as the member is swung about said axis.

4,267,825

SOLAR HEAT COLLECTOR WITH HEAT PIPES

Dan S. Ward, Fort Collins, Colo., assignor to Entec Products Corporation, Fort Collins, Colo.

Filed Jun. 27, 1979, Ser. No. 52,620
Int. Cl.[3] F24J *3/02*; F28D *15/00*
U.S. Cl. 126—433 **9 Claims**



1. A solar heat collector comprising, a heat storage tank containing a heatable fluid, solar heat receiving means for receiving heat from the sun comprising at least one heat pipe having one end for receiving solar heat and an opposite end in the fluid in said heat storage tank, means pivotally mounting said heat pipe to a wall of said tank through which said heat pipe extends whereby said heat pipe is positioned at an angle of at least 30° with respect to the horizontal with said one end lower than said opposite end when the fluid in said tank is to be heated and wherein said heat pipe is pivotable to an angle of at least 30° with respect to the horizontal with said opposite end lower than said one end for removing heat from the fluid in said tank, and an enclosed solar chamber slidably mounted on said wall of said tank through which said heat pipe extends for containing said one end of said heat pipe, said solar chamber including at least one transparent wall through which rays from the sun may pass to heat said one end of said heat pipe, said solar chamber being slidable downwardly for containing said one end of said heat pipe when it is in its lower position and slidable upwardly for containing said one end of said heat pipe when it is at its higher position.

4,267,826

SOLAR COLLECTOR FOR HEATING AND COOLING

William H. Hitt, Jr., San Bernardino, Calif., assignor to Dale C. Miller, Riverside, Calif.

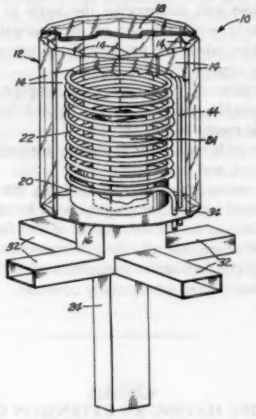
Filed Jun. 20, 1978, Ser. No. 917,210
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—440 **2 Claims**

1. A solar collector comprising, in combination:

a plurality of refractors arranged side-by-side and facing in a plurality of directions toward that portion of the sky in which the sun appears to travel from sunrise to sunset, said refractors being disposed so that as the sun moves across the sky, successive groups of the refractors bend the rays of sunlight so that they are concentrated on a common target;

said common target comprising tubing carrying fluid that is to be heated by the sun's rays that are concentrated and intensified by said refractors;

said common target additionally including a cylindrical shell around which said tubing is coiled in heat-transfer contact



therewith, so that the shell is heated by the hot fluid in the tubing; and

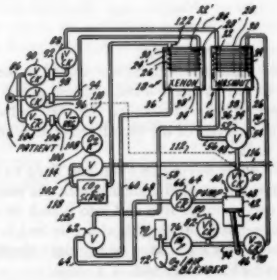
means for circulating air through said shell whereby the air is warmed by contact with the heated shell and is then directed to space to be warmed.

4,267,827

VENTILATOR APPARATUS FOR LIFE-SUPPORT AND LUNG SCAN

L. Andrew Rauscher, Rancho Sante Fe, and Donald G. Parsons, San Diego, both of Calif., assignors to The Regents of the Univ. of California, Berkeley, Calif.

Filed Oct. 12, 1979, Ser. No. 84,129
Int. Cl.[3] A61B *6/00*
U.S. Cl. 128—1.1 **6 Claims**



1. Apparatus for ventilating patient comprising:

controllable motive means for generating a predetermined sequence of motive forces;

first reservoir means for receiving an oxygen/air mixture in an amount necessary for administering said mixture to a patient for both an inhalation and exhalation phase and discharging the same to the patient in accordance with a set of predetermined ventilation parameters when the predetermined sequence of motive forces is applied thereto;

first inspiratory path means for supplying the oxygen/air

mixture discharged from the first reservoir means to the patient;

second reservoir means for receiving an oxygen/air/traceable gas mixture in an amount necessary for administering said mixture to a patient for both an inhalation and exhalation phase and discharging the same to the patient in accordance with the set of predetermined ventilation parameters when the predetermined sequence of motive forces is applied thereto;

second inspiratory path means for supplying the oxygen-/air/traceable gas mixture discharged from the second reservoir means to the patient;

expiratory path means for receiving expired mixture from the patient; and

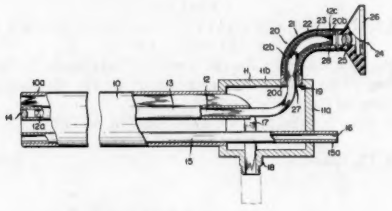
switching means for selectively applying the predetermined sequence of motive forces generated by the controllable motive means to different ones of the first and second reservoir means whereby the patient is continuously ventilated and the ventilation parameters of the predetermined set are maintained substantially constant.

4,267,828

ENDOSCOPE HAVING AN EXTENSION GUIDE FOR OBSERVATION

Kazumasa Matsuo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1979, Ser. No. 51,032
Int. Cl.[3] A61B *1/06*
U.S. Cl. 128—6 **2 Claims**



1. An endoscope comprising:

an elongated rigid sheath to be introduced in the body cavity, said sheath having a distal end and a base end,

a control section housing having a side wall and a pair of end walls, said base end of the sheath being attached to one of the end walls,

an extension guide having an open end fixed to the control section housing to communicate with the interior of the housing and an outer free end into which an eyepiece is fitted, said guide being flexible along its length such that it may be bent into a plurality of angular orientations with respect to said housing, and

a single optical fiber bundle of an observation system made of many thin glass fibers and having a distal end inserted within the sheath and a base end portion extended into the extension guide through said housing and said open end of the extension guide, said base end portion of the fiber bundle having a mounting base end fixed to the extension guide in a position near to the eyepiece and directly optically connected to the eyepiece without interposing a prism therebetween,

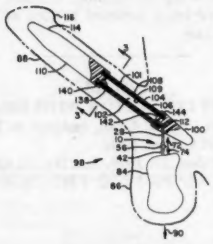
said base end portion of said fiber bundle having a flexibility except for the mounting base end and the glass fibers of the remaining portion of the fiber bundle being united together in a rigid glass rod-like fashion.

4,267,829

PENILE PROSTHESIS

John H. Burton, Minnetonka, and Michael A. Mikulich, St. Paul, both of Minn., assignors to American Medical Systems, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 28,979, Apr. 11, 1979, Pat. No. 4,224,934. This application Dec. 28, 1979, Ser. No. 108,124
Int. Cl.[3] A61F *5/00*
U.S. Cl. 128—79 **14 Claims**



1. An implantable penile prosthesis comprising:

an elongated front portion for mounting inside the distal portion of a patient's penis, said front portion comprising a cylinder which is substantially rigid so as to impart rigidity to said penis and thus provide for satisfactory erection of said penis, when said penile prosthesis is implanted in said penis and when said penile prosthesis is placed in an erect condition.

a rear portion for mounting inside the proximal portion of said penis;

a tubular section attached to and mounted between said front portion and said rear portion, and having a collapsible tubular sheath and an internal chamber means so that said penile prosthesis assumes an erect condition when fluid pressure is supplied to said chamber means and so that said penile prosthesis is allowed to assume a nonerect, bent condition when fluid pressure is allowed to release from said chamber means wherein said tubular sheath is allowed to collapse when said penile prosthesis assumes a nonerect, bent condition so that when said penile prosthesis is implanted in said penis, said penis is allowed to bend in a region within the length of said tubular section; and

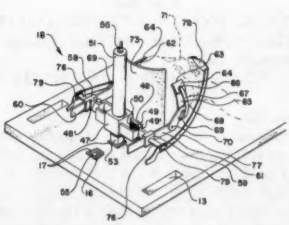
a pump means actuateable to supply fluid pressure to said chamber means.

4,267,830

COMBINATION SPINE BOARD AND HEAD STABILIZER

Wiley D. Vick, Stantonsburg, N.C. 27883

Filed Jan. 25, 1979, Ser. No. 6,471
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—87 R **9 Claims**



1. A combination spine board and head stabilizer comprising: a substantially planar, rigid short spine board having a top

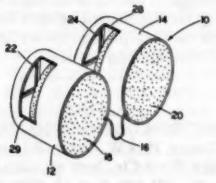
and bottom for use in conjunction with the head and trunk of a patient; a substantially planar, rigid long spine board having a top and bottom for use in conjunction with the head and entire body of the patient; mechanical means for removably connecting the bottom of said short board to the top of said long board in stacked juxtaposed relationship; and a mechanical head stabilizing means operatively mounted on the top of said short board for stabilizing the head of the patient using the board, said mechanical head stabilizing means includes a pair of head pads for grippingly holding opposite sides of the head, a pair of pinion driven rack means for laterally adjusting the relative position of said pads, a pair of support prongs longitudinally disposed relative to said board and adjustably mounted one on each end of said pair of racks for longitudinally adjusting the relative position of said pads, and means for vertically adjusting the relative position of said pads.

4,267,831

NASAL AIR FILTER AND MEDICAMENT DISPENSER DEVICE

Rogelio M. Aguilar, P.O. Box 46, Alajuela, Costa Rica

Filed Sep. 24, 1979, Ser. No. 78,004
Int. Cl.³ A61M *15/08*
U.S. Cl. 128—203.14 **8 Claims**



1. A nasal insert comprising:

a pair of dispenser devices adapted to be positioned within the nasal passages, each of said devices being formed of a resilient, cylindrical wall member;

a connecting strip extending between said cylindrical members and adapted to bridge across the septum;

an absorptive plug located within each of said cylindrical members and adapted to be saturated with a medicament;

a sidewall of each of said cylindrical members being established by a continuous cylindrical surface, an access opening being formed in a portion of said surface for receiving said plug;

a lower end of each of said cylindrical members including a filter element; and

an upper end of each of said cylindrical members including a means for retaining said plug in said member while permitting axial air flow.

4,267,832

EXPIRATION VALVE APPARATUS FOR USE WITH A RESPIRATOR OR LIKE APPARATUS

Taisto Häkkinen, Kaarlonkatu 25, 13210 Hämeenlinna 21, Finland

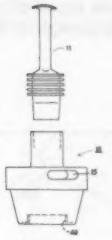
Filed Apr. 17, 1979, Ser. No. 30,844
Claims priority, application Finland, Apr. 18, 1978, 781171
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.24 **5 Claims**

1. Valve apparatus for use in connection with a respirator or like apparatus suitable for use in resuscitation for permitting both inhalation and exhalation, the valve apparatus adapted to provide stepless or continuous adjustment of the counter-pressure presented to expiration, comprising:

a rear portion having at least one wall defining an interior space therewithin, said wall having an opening formed therein adapted to provide a fluid inlet into said interior space and including means adapted to be connected to a drug atomizer of a respirator or like apparatus suitable for resuscitation use to receive inhalation gas therefrom;

one-way diaphragm valve means operatively associated with said rear portion adapted to open upon inhalation to allow the passage of the inhalation from said rear portion interior space therethrough under the effect of incoming pressure flow during inspiration and being adapted to close during expiration when the incoming pressure flow ceases to prevent the passage of exhalation into said rear portion interior space;

a front portion having at least one wall defining an interior space therewithin, said one wall including tubular means for connecting the same to a mouthpiece of the respirator or the like and a substantially cylindrical skirt portion, concentrically disposed with respect to said tubular means said front portion being operatively connected to said rear portion in a manner such that said one-way valve means is interposed between the interior spaces defined by said front and rear portions, said substantially cylindrical skirt



portion having an aperture formed therein providing communication between said front portion interior space and the external atmosphere, said one wall of said front portion including means associated with said one-way diaphragm valve means to prevent flow through said aperture during inhalation and permit flow through said tubular means, said interior space of said front portion and said aperture during exhalation; and

an adjustment ring including a substantially cylindrical skirt portion having an aperture formed therethrough, said ring being concentrically and rotatably mounted about said tubular means on said front portion with said ring skirt portion being concentric with and overlapping said front portion skirt portion, said ring being rotatable with respect to said front portion in a continuous and stepless manner such that the adjustment ring aperture is adapted to be moved into overlapping relationship with respect to said front portion aperture to any desired degree so that the effective size of said front portion aperture can be steplessly and continuously varied.

4,267,833

METHOD OF FLUSHING A MEDICAL FLUID

Larry N. Barger, Glendale, and Kenneth R. McCord, Lakewood, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

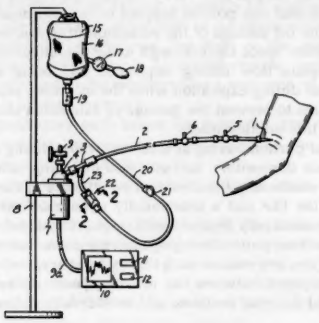
Filed Apr. 24, 1979, Ser. No. 32,830
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 F **11 Claims**

1. A method of flushing a fluid through a medical valve with an elastic tube that having a noncircular outer surface, which tube encases a flow restrictor and combines with such restrictor to form a flow passage means comprising the steps of:

(a) passing fluid through the flow passage means at a predetermined rate;

(b) squeezing the noncircular outer surface of the tube to temporarily form a flush passage having a substantially greater flow rate;

(c) holding the tube in squeezed condition until flushing is completed; and



(d) releasing the tube to seal off the flush passage causing fluid to flow only through the flow passage means.

4,267,834

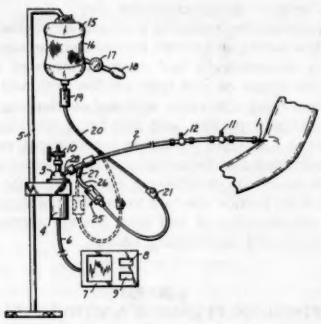
SYSTEM FOR FLUSHING A MEDICAL FLUID

Larry N. Barger, Glendale; Kenneth R. McCord, Lakewood, and Claude A. Vidal, Los Angeles, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 24, 1979, Ser. No. 32,831

Int. Cl.[3] A61M 5/00

U.S. Cl. 128—214 F **16 Claims**



1. A system for flushing a medical fluid that includes a pressure wave tube for coupling a patient connector with a pressure transducer, and which includes a feed tube to continuously infuse fluid to a patient through a side port of the system, wherein the improvement comprises: a flushing valve connected to the feed tube and spaced from the side port by a flexible tube segment; and the flushing valve includes an elastically distortable tube having a noncircular outer surface, and a restriction in the tube which combines with the tube to form a restricted passage means having a predetermined flow rate therethrough, said tube being distortable to temporarily form a flush passage in the valve having a substantially faster flow rate.

4,267,835

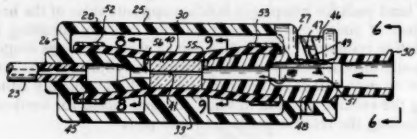
MEDICAL FLUSHING VALVE

Larry N. Barger, Glendale, and Kenneth R. McCord, Lakewood, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Apr. 24, 1979, Ser. No. 32,832

Int. Cl.[2] A61M 5/00

U.S. Cl. 128—214 E **34 Claims**



1. A medical flushing valve comprising: an elastically distortable tube with a noncircular outer surface that includes a force concentrating section; and a restrictor in the tube which combines with the tube to form a restricted passage means in the form of a fixed size bore extending through the restrictor and having a predetermined flow rate therethrough, said tube being distortable by application of a force to such force concentrating section of the tube's outer surface to temporarily form a flush passage in the valve having a substantially faster flow rate during the application of such force, which tube is adapted to close the flush passage upon removal of such force from the force concentrating section.

4,267,836

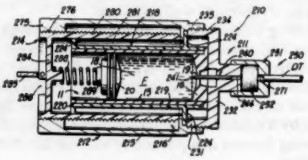
INJECTION DEVICE AND METHOD

Douglass G. Whitney, 2518 W. Wesley Rd., and John K. Martin, III, 2837 Ridge Wood Cir., both of, Atlanta, Ga. 30327

Division of Ser. No. 471,528, Nov. 12, 1976, Pat. No. 4,150,672. This application Apr. 16, 1979, Ser. No. 30,277

Int. Cl.[3] A61M 5/20

U.S. Cl. 128—215 **6 Claims**



1. An injector to inject fluid into a patient comprising:

an ampule holder defining an ampule receiving chamber therein;

an ampule assembly removably mounted in said ampule receiving chamber in said ampule holder, said ampule assembly including an ampule comprising:

a seamless tubular side wall defining a passage therethrough opening onto opposite ends of said side wall;

a penetrable member closing one end of said passage at one end of said side wall so that a discharge opening from said passage can be made by penetrating said penetrable member; and

a piston member slidably received in said passage from that end of said tubular side wall opposite said penetrable member and in sealing engagement with said tubular side wall so that a fluid chamber is defined by and between said tubular side wall, said piston member and said penetrable member and filled with the fluid whereby the fluid can be dispensed from said fluid chamber upon penetration of said penetrable member to form the discharge opening and forcing said piston member toward said penetrable member;

cap means removably connected to said ampule holder and engaging that end of said ampule at said penetrable member to positively and removably position said ampule in said ampule receiving chamber;

penetrating means carried by said cap means for penetrating said penetrable member on said ampule as an incident to the positioning of said ampule in said ampule holder and for forming a fluid outlet from said fluid chamber through which the fluid is injected into the patient;

a manually engagable externally threaded sleeve member having a projecting end and an opposite end and defining an axially extending ampule receiving passage therein; said sleeve member threadedly engaging said ampule holder so that, as said sleeve member is screwed into said ampule holder, the projecting end of said sleeve member is moved axially along said ampule receiving chamber in said ampule holder and that end of said ampule opposite said penetrable member is slidably supported by said sleeve member within said ampule receiving passage therein, said sleeve member including an end wall at said opposite end closing said ampule receiving passage; and

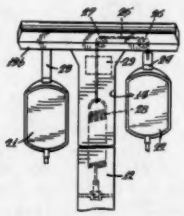
a drive spring assembly extending between said end wall on said sleeve member and said piston, said drive spring assembly including a compressible coil spring mounted on said end wall of said sleeve member and having a projecting end extending axially of said sleeve member within said ampule receiving passage toward said piston, said drive spring assembly further including a drive plunger on the projecting end of said coil spring operatively engaging said piston so that, as said coil spring is compressed, the spring force urges said piston toward said penetrable member to force fluid out the fluid outlet, the length of said coil spring selected so that, as said sleeve member is manually screwed into said ampule holder, the compression of said coil spring is increased to selectively increase the effective spring force urging said piston toward said penetrable member.

4,267,837

BLOOD COLLECTION MONITORING DEVICE AND METHOD

Robert W. Purdy, Sunnyvale, Calif., and Don A. Arneson, Elgin, Ill., assignors to SBR Lab Inc., Elgin, Ill.

Filed Sep. 27, 1979, Ser. No. 79,487
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—275 **6 Claims**



1. Apparatus for monitoring the collection of blood from a donor into a plastic bag assembly which includes a blood collection bag, an anticoagulant supply bag, a first pliable tube interconnecting the two bags and a second pliable tube connected at one end to the blood collection bag and carrying a needle on its free end for insertion into a vein of the donor and comprising:

a horizontal base;

an upright support column mounted on said base;

a control console disposed in a horizontal plane and mounted on top of said column;

a first relatively fixed support for mounting the anticoagulant supply bag beneath said console;

a second extendable support for mounting the blood collection bag beneath said console and being movable downward proportionately to the weight of blood and anticoagulant collected;

a first manually actuatable hemostat means adapted to receive and restrict the flow of anticoagulant through the first tube;

a second manually and electromagnetically actuatable hemostat means adapted to receive and restrict the flow of blood through the second tube; and

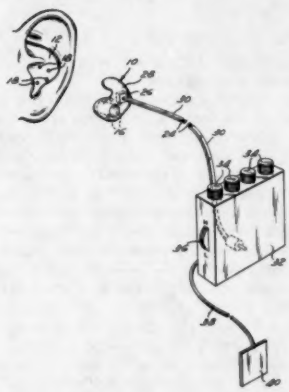
electrical means effective to actuate said second hemostat means according to prescribed blood collection procedures.

4,267,838

APPARATUS FOR ELECTRICAL IMPULSE ACUPRESSURE TREATMENT

Francis J. McCall, 16250 Ventura Blvd., Encino, Calif. 91436

Filed Aug. 29, 1979, Ser. No. 70,747
Int. Cl.³ A61H *39/04*; A61N *1/36*
U.S. Cl. 128—303 R **3 Claims**



1. An electrical pulse acupressure treatment device comprising:

a plastic molded housing having an interior surface and an exterior surface, said housing adapted to be removably connected to a portion of a human body in a predetermined position relative to acupuncture points of the body;

a plurality of separate metallic nodules imbedded in said interior surface of said plastic molded housing, each of said nodules being positioned on said housing to press against a said acupuncture point and to therefore treat the corresponding body function when said housing is retained in said predetermined position; and

an electrical conductor assembly, composed of a plurality of separate electrical conductors, each said nodule being attached to a said electrical conductor with there being a separate elecrical conductor for each said nodule, each said electrical conductor being combined at a junction box, said junction box being polygonal shaped, a polygonal shaped recess formed in said exterior surface of said plastic molded housing, said junction box tightly fitting within said polygonal shaped recess, a source of electrical energy to produce electrical pulses, said electrical conductors being electrically connected to said source of electrical energy, said source of electrical energy being of a size to be readily carried by a human being, said electrical conductors to transmit said electrical pulses to said nodules.

4,267,839
SURGICAL INSTRUMENT FOR USE IN REVERSIBLE STERILIZATION OR PERMANENT OCCLUSION PROCEDURES

Leonard E. Laufe, Chapel Hill, and Robert G. Wheeler, Durham, both of N.C., assignors to Repromed, Inc., Chapel Hill, N.C.

Filed Sep. 12, 1979, Ser. No. 74,884
Int. Cl.³ A61B *17/12*
U.S. Cl. 128—303 A **4 Claims**

1. An instrument for use in reversible or permanent occlusion procedures, comprising:

(a) a forcep-like structure providing a pair of resilient leg members of unequal length joined at one end and extending outwardly therefrom in a normally spaced relation;

(b) a hollow, thin wall, cylindrical, rigid sleeve integrally secured at a position intermediate the length thereof to the terminal end of the longer of said leg members, said sleeve having its central axis oriented at an obtuse angle with respect to the central axis of said longer leg member and having a forward portion extending outwardly from the terminal end of said longer leg member and a rearwardly extending portion positioned to clear said shorter leg member when closed against said longer leg member, the outside diameter of said sleeve being adapted to receive an occluding hood, band device or the like;

(c) a collar slidably mounted on said forward sleeve portion forward of the terminal end of said longer leg member; and

(d) a linkage extending between and having pivotal connections to the terminal end of said shorter leg member and said collar enabling said collar to be advanced on and within the length of the forward portion of said sleeve by closing said shorter leg member on said longer leg member and to be retracted by allowing said shorter leg member to retract to its normal outwardly spaced position thereby enabling an occluding device to be installed on and ejected from said sleeve forward portion at appropriate times during the performing of an occlusion procedure.

4,267,840
ELECTROSURGICAL GROUNDING PAD

Lawrence S. Lazar, Morristown, and Robert F. Wittemann, New Brunswick, both of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 8, 1979, Ser. No. 1,503
Int. Cl.³ A61B *17/39*
U.S. Cl. 128—303.13 **6 Claims**

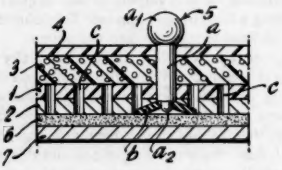
1. A grounding electrode useful in electrosurgery and easily contoured to body surfaces which comprises:

an open cell polymeric foam;

a flexible, perforated metal sheet having an upper side and a lower side;

a fenestrated film having first and second sides;

and electrically conductive means adapted to be connected to an electrosurgical device for conducting an electrical curreent therefrom; said lower side of said metal sheet being coated with a conductive adhesive, said upper side of said metal sheet being adhesively secured to said first

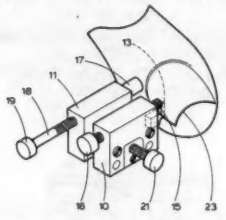


side of said fenestrated film, said polymeric foam being adhesively secured to said second side of said fenestrated film, and said conductive means being secured to said metal sheet and extending through said fenestrated film and said polymeric foam.

4,267,841
NAIL MATRIX TREPHINE

Alexander R. Fraser, 2 Ralston Pl., West Ferry, Dundee, Scotland

Filed Dec. 22, 1978, Ser. No. 972,635
Claims priority, application United Kingdom, Jan. 6, 1978, 562/78
Int. Cl.³ A61F *17/32*; A61B *17/00*; A61F *5/04*
U.S. Cl. 128—305 **6 Claims**



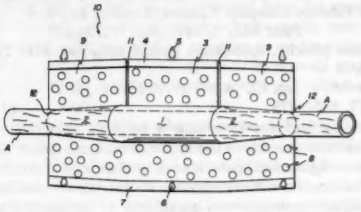
1. A nail-matrix trephine adapted to be attached to a nail plate of a toe or finger for removing unwanted nail-matrix cells, including a clamping head comprising a hooked nail engaging member adapted to be located beneath a nail plate, a clamping member mounted on said clamping head and adapted to co-operate with said hooked nail engaging member to firmly attach said clamping head to said nail plate and clamp alignment means on said hooked nail engaging member for aligning said clamping head on said nail plate, a guide head adapted for supporting and guiding trephine cutter means mounted thereon, and adjustable means interconnecting said clamping head and said guide head, wherein the adjustable means includes guide rails on which said clamping head and said guide head are moveable one relative to the other and further including a screw for moving said heads one relative to the other; wherein upon clamping and aligning said clamping head to said nail plate the position of said guide head is adjusted so that when said trephine cutter means is advanced a selected portion of the nail-matrix cells is removed.

4,267,842

MICRO-ARTERIAL SLEEVE-GRIP

Steven L. Archibald, 1816 F. St. #7, Sacramento, Calif. 95814

Filed Jul. 9, 1979, Ser. No. 56,133
Int. Cl.[3] A61B 17/11
U.S. Cl. 128—334 R **10 Claims**



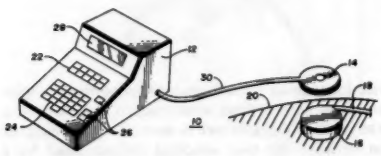
1. A device for joining arteries and the like comprising an innertube having a central portion of substantially uniform cross section, said innertube having a central opening therethrough which terminates at opposed extremities thereof to open ends, and having end portions on opposite sides of said central portion, said innertube end portions having a generally tapering cross section adapted to receive an artery or vein thereover, and one-piece gripping means having a central portion movable into overlying engagement with said innertube central portion and oppositely disposed, tapering end portions movable independently of said gripping means central portion into overlying retaining engagement with an artery disposed on said innertube end portions.

4,267,843

MEANS TO INHIBIT A DIGITAL CARDIAC PACEMAKER

Ray S. McDonald, St. Paul, and Jerome T. Hartlaub, New Brighton, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,959
Int. Cl.[3] A61N 1/36
U.S. Cl. 128—419 PT **27 Claims**



1. a programmable implantable medical device having program stroage means for accepting and storing a programming signal remotely applied thereto which influences the operating conditions of the medical device, one of the conditions being the complete inhibition of the operation of said medical device on the body in which the medical device is implanted, characterized by:

program acceptance means responsive to the programming signal for providing signals manifesting the conditions under which said medical device is programmed to operate, one of said signals comprising an inhibition condition signal manifested directly upon receipt and acceptance of a programming signal providing the inhibition condition:

oscillator means responsive to said program acceptance means signals, other than said inhibition condition signal, for providing a periodic control signal for periodically operating said medical device;

inhibit control means responsive to the inhibition condition signal for providing an inhibit control means signal to completely inhibit operation of said medical device on the body upon acceptance by the program acceptance means of the programming signal; and

timing means responsive to said oscillator means for terminating the provision of said inhibition condition signal after the passage of a certain time related to a predetermined number of periodic control signals of said oscillator means and since the receipt of the last programming signal manifesting the inhibition condition.

4,267,844

MEDICAL INSTRUMENT FOR DETERMINING JAUNDICE

Akio Yamanishi, Tondabayashi, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 2, 1979, Ser. No. 35,230
Claims priority, application Japan, May 15, 1978, 53/57867
Int. Cl.[3] A61B 5/00
U.S. Cl. 128—633 **23 Claims**

1. A medical instrument for determining the existence and degree of jaundice comprising:

light source means including means for producing a flash of light containing at least two separate wavelengths;

means for receiving light from the light source means after contact with living tissue of a person and producing a pair of electrical signals from a pair of separate wavelengths of light;

means for automatically activating said light source means at a predetermined pressure between said medical instrument and said living tissue, and

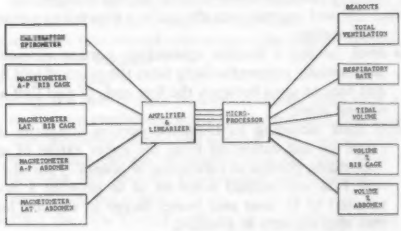
means for processing the pair of electrical signals to determine the bilirubin value in the tissue.

4,267,845

METHOD AND APPARATUS FOR MEASURING PULMONARY VENTILATION

Charles H. Robertson, Jr., 4200 Oxford Circle East, Richmond, Va. 23221, and Mark E. Bradley, 32 Orchard Way South, Rockville, Md. 20854

Filed Oct. 5, 1978, Ser. No. 948,789
Int. Cl.[3] A61B 5/08
U.S. Cl. 128—721 **3 Claims**



1. A device for measuring pulmonary ventilation comprising microprocessor means for receiving discrete electrical signals and at least 4 sets of magnetometer means for measuring lateral and anterior displacement of the rib cage and abdomen during breathing and calibration means for measuring the volume of

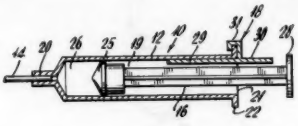
breaths taken during breathing; said magnetometer means and calibration means generating discrete analog electrical signals in response to said measured displacement and volume respectively and being connected to said microprocessor means for receiving said discrete electrical signals from each of said magnetometer means and said calibration means and performing an analog to digital conversion on said signals; a plurality of readout means being connected to said microprocessor means for receiving said digital signals and displaying separate readouts for total pulmonary ventilation, respiratory rate, tidal volume, and comparative volume contributed by rib cage and abdomen.

4,267,846

CONTROLLED VOLUME BLOOD SAMPLING SYRINGE

Stavros B. Kontos, Oakland, N.J., assignor to Critikon, Inc., Tampa, Fla.

Filed Jan. 29, 1979, Ser. No. 7,135
Int. Cl.³ A61B 5/14
U.S. Cl. 128—765 **1 Claim**



1. A syringe useful for taking samples of blood comprising:

A barrel having a bore therethrough, a distal end of said barrel adapted to be connected to a hollow needle so that the lumen of the needle and the bore are in fluid communication, the bore at the proximal end of the barrel being open;

a flange extending from said barrel about said proximal end thereof, substantially perpendicularly to the longitudinal axis of said barrel;

a plunger slidably positioned in said bore having a piston at its forward end providing a fluid-tight seal against the wall of the barrel, said plunger having a rearward portion extending outwardly beyond the proximal end of said barrel;

a one piece stop element including:

a first arm extending into said bore and having a free end positioned to engage said piston upon its outward movement to thereby limit the outward travel of said plunger;

said first arm having a first surface confronting the inside surface of said barrel and contoured conformingly with the shape of said barrel;

a second arm extending rearwardly beyond the proximal end of said barrel and having a free end positioned to engage the plunger upon its inward movement to thereby limit the inward travel of said plunger;

said first and second arms aligned in a generally co-planar relationship;

a hook having a flexible upstanding portion extending substantially perpendicularly from the plane of said first and second arms between the free ends of said first and second arms;

said hook including an L-shaped portion integrally disposed on and extending from the upper extent of said upstanding portion in a direction of generally parallel to said first and second arms so as to provide a hook adapted to fit over said barrel flange to thereby hold said stop element in position;

whereby said stop element maintains a desired maximum volume of blood that may be collected in the syringe by limiting the rearward travel of said plunger and maintains a desired minimum volume of blood that may be collected in the syringe by limiting the forward travel of said plunger;

said stop element adapted to permit the maximum and minimum volume of said syringe to be maintained for repeated use without adjustment.

4,267,847

TOBACCO ADDITIVES

William W. Reid, London, England, assignor to British-American Tobacco Company Limited, London, England

Filed May 7, 1979, Ser. No. 36,528
Claims priority, application United Kingdom, May 21, 1978, 19228/78
Int. Cl.³ A24B 3/12, 15/24, 15/30
U.S. Cl. 131—275 **12 Claims**

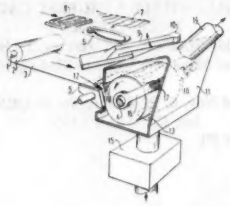
1. A method for obtaining a smoking material additive which is a smoke-aroma precursor, which comprises the steps of removing surface gum having a diterpene fraction and a lipid fraction from fresh Nicotiana plant parts including gums and subjecting the gum to a partition or purification process whereby the diterpene fraction constituting the precursor and the fraction containing undesirable lipids are obtained, the latter fraction being discarded.

4,267,848

METHOD AND DEVICE FOR CONDITIONING TOBACCO LEAVES OR PARTS THEREOF IN A COIL OR BOBBIN

Franciscus N. Rijckaert, RR Vught, Netherlands, assignor to B. V. Arenco P.M.B., Best, Netherlands

Filed Jun. 22, 1979, Ser. No. 51,064
Claims priority, application Netherlands, Jul. 18, 1978, 7807682
Int. Cl.³ A24B 3/12
U.S. Cl. 131—304 **12 Claims**



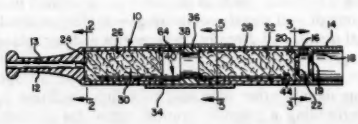
1. A device for treating tobacco material comprising a spindle for receiving a bobbin filled with tobacco material and a spindle for an empty bobbin, as well as means for stretching the belt portion between the two windings characterized by a closed cabinet around the spindle with the filled bobbin, said cabinet having a passage for the belt and having means for supplying and conducting away a conditioning medium.

4,267,849

CIGARETTE HOLDER

Ernest A. Smith, 757 NW. Coast St., Newport, Oreg. 97365

Filed Jul. 16, 1979, Ser. No. 57,737
Int. Cl.³ A24F 3/02, 13/02, 9/04
U.S. Cl. 131—84 R **13 Claims**



1. A cigarette holder comprising:

an elongated hollow tubular shell adapted to receive filtering material therewithin, said tubular shell having a mouthpiece at one end provided with an interior passage communicating with the interior of said shell and a cigarette holding member at the other end having an opening communicating with the interior of said shell, said tubular shell having an internal longitudinal bore for receiving said filtering material through which smoke must pass from said cigarette holding member to said mouthpiece, said cigarette holder being separable to provide access to the interior of said bore for inserting and withdrawing filtering material,

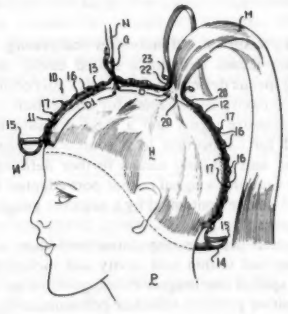
and a retrieving member adapted to be carried within said holder for urging filtering material within said bore and retrieving filtering material from said bore, said retrieving member comprising an elongated wire adapted to be received along the side of said bore adjacent said filtering material and being reversely bent at one end to provide the configuration of a hook and including a handle at the remaining end for tamping filtering material into said bore, said handle being disposed generally in the plane of said elongated wire to fit along said bore said holder providing means for slidably receiving said retrieving member.

4,267,850

FROSTING CAP

Eileen Barrett, 3613 Orlando Pl., Alexandria, Va. 22305

Filed Mar. 12, 1980, Ser. No. 129,658
Int. Cl.[3] A45D *8/40*
U.S. Cl. 132—9 **7 Claims**



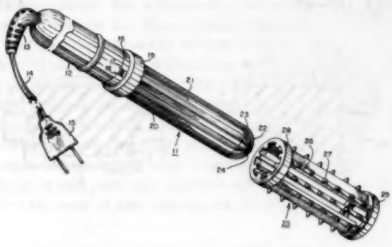
1. A frosting device comprising a generally flexible cap adapted to rest upon the head of a person in generally overlying relationship to the hair thereof, a plurality of first aperture means disposed about said cap for pulling therethrough groups of hair from an interior of said cap to an exterior thereof whereby each such group of hair can be individually treated, and at least one further aperture means substantially larger than any one of said plurality of first aperture means for receiving therethrough a single mass of hair disposed exteriorly of said cap whereby said groups of hair are individually drawn from said mass of hair in an inward direction from the cap exterior through said larger aperture means along a portion of said cap interior and thereafter outwardly through selected ones of said first aperture means incident to treating the individual groups of hair exteriorly of the cap.

4,267,851

HAIR CURLING DEVICE

Richard E. Plaisted, Framingham, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Jun. 11, 1979, Ser. No. 47,367
Int. Cl.[3] A45D *2/12, 4/18*
U.S. Cl. 132—33 R **12 Claims**



1. A curling device comprising:

an elongated tubular heat conductive rod portion defining a heating chamber and having first and second ends and a hair winding portion disposed between said first and second ends, said hair winding portion including a plurality of longitudinal channels;

heating means disposed in said heating chamber for providing heat to said hair winding portion; and

a tubular cage-like roller member, having first and second open ends, slidably mountable on said hair winding portion of said rod through either said first or second open end, said roller member including a plurality of longitudinal bars, each bar having a height substantially equal to or less than the depth of said mating channels of said rod so that a wound tress will be in direct contact with the outer surface of a substantial portion of said hair winding portion.

4,267,852

PROCESS FOR ENHANCING AND STRENGTHENING THE GROWTH OF NAILS

Judith E. Hullinger, 6605 E. State Blvd., Suite No. 7, Fort Wayne, Ind. 46815

Filed Sep. 17, 1979, Ser. No. 75,882
Int. Cl.[3] A45D *29/00*
U.S. Cl. 132—73 **9 Claims**

1. A process for enhancing the growth and strength of fingernails and toenails, including the steps of:

coating the nails with a dryable protein containing tacky emulsion comprising a mixture of henna, an aqueous solution of collagen polypeptides and water;

heating the thus coated nails to open the nail pores to absorb the protein mixture;

drying the nails;

coating the thus protein penetrated coated nails with a second cream emulsion coating, preferably at room temperature, including protein and silicone in an amount sufficient to enhance protein dispersion into the nails from both coatings and provide a protective and shinable silicone coating on the nails;

buffing the thus coated nails to increase the moisture and protein content in the nails;

drying the thus treated nails;

coating the nails with a dryable liquid suspension of a fibrous material to minimize breaking of the nails and provide a base for later applied polish; and

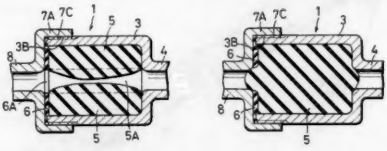
drying the suspension to adhere the ingredients of the suspension to the second coating.

4,267,853

SELF-CLOSING GAS PIPES AND PIPE JOINTS

Yukio Yamaguchi, Seto; Kenji Ishihara, Nagoya, and Kikuo Yonekura, Higashibayashi, all of Japan, assignors to Toho Gasu Kabushiki Daisha, Nagoya and Kabushiki Kaisha Togawa Gomu Seizosho, Osaka, both of, Japan

Filed Feb. 13, 1978, Ser. No. 877,566
Int. Cl.³ F16K *17/38;* **C01B** *31/04*
U.S. Cl. 137—67 **4 Claims**



1. A self-closing joint for connecting at least a pair of metallic gas pipes, said joint comprising:

a metallic tubular member having an axial passage for gas and having means for connection with said gas pipes; and

means provided within said metallic tubular member and adapted to close said axial passage upon expansion by heat, said means being formed from material which expands and carbonizes when heated, comprising a rubbery material containing thermally expansible graphite, and

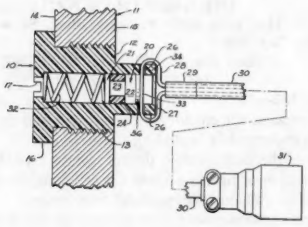
wherein said rubbery material containing thermally expansible graphite comprises about 2 to 30 parts by weight of oxidized thermally expansible graphite powder mixed with 100 parts by weight of raw rubber.

4,267,854

FLOOD VALVE

Carlton W. Naab, Williamsville, and Roman Jankowiak, Cheektowaga, both of N.Y., assignors to Conax Corporation, Buffalo, N.Y.

Filed Aug. 6, 1979, Ser. No. 64,110
Int. Cl.³ F16K *17/40*
U.S. Cl. 137—72 **13 Claims**



1. A flood valve adapted to be mounted in an opening provided through a wall separating a fluid on one side thereof from a space on the other side thereof, said flood valve comprising:

(a) a body member adapted to normally close such opening to sealingly separate the fluid from the space, said body member having a forward portion adapted to be sealingly mounted in such opening and having a rearward portion communicating with the space, said body member also having a bore open to the fluid and extending through said rearward portion;

(b) a piston assembly slidably mounted in said bore, said piston assembly having one face exposed to the fluid and arranged in sealing engagement with the wall of said bore to sealingly separate the fluid from the space; and

(c) an electrical heating element extending through said rearward portion and restraining said piston assembly against movement through said rearward portion;

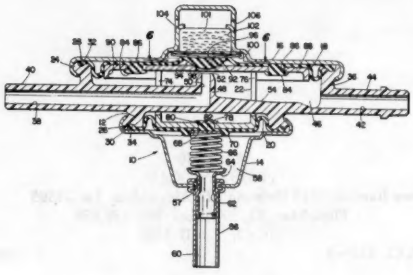
(d) said heating element being adapted to be selectively energized to melt the material of said rearward portion and thereby permit movement of said piston assembly through said rearward portion to admit the fluid into the space.

4,267,855

PNEUMATIC VACUUM REGULATOR

Cyril E. Bradshaw, Kalamazoo, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jan. 17, 1980, Ser. No. 112,892
Int. Cl.³ G05D *16/06*
U.S. Cl. 137—85 **16 Claims**



1. A fluid pressure signal converter comprising:

(a) housing means defining a sealed cavity therein, said housing means defining a signal inlet port communicating with said cavity and adapted for connection to a positive gauge pressure signal and a fluid pressure source port adapted for connection to a source of negative gauge pressure, said housing means further defining an atmospheric vent and a signal output port adapted for connection to a device controlled by a negative gauge fluid pressure signal;

(b) differential pressure responsive transducer means movably disposed within said cavity and including first and second spaced diaphragms defining within said cavity:

(i) a positive pressure chamber communicating only with said signal inlet port;

(ii) a negative pressure chamber communicating with said source port and said signal output port with said diaphragms forming opposite walls of said negative pressure chamber;

(iii) structure defining a valve seat stationary with respect to said housing means and a valve member movable with respect thereto for controlling fluid flow through said source port;

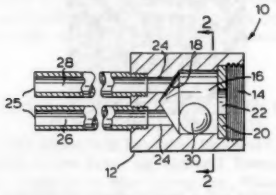
(iv) means defining a bleed port communicating said vent port with said negative pressure chamber,

(v) said valve member being movable with respect to said bleed port for controlling flow therethrough wherein, for a given positive pressure input signal, said transducer means moves to modulate flow through said valve seat and said bleed port to maintain said negative pressure output signal substantially constant.

4,267,856
FLUID OSCILLATOR

Clyde C. K. Kwok, Montreal, and Leszek Suchy, St. Bruno, both of Canada, assignors to Edward V. Rippingille, Jr., Key Largo, Fla.

Continuation of Ser. No. 669,013, Aug. 18, 1976, abandoned.
This application Aug. 14, 1978, Ser. No. 1,971
Claims priority, application Canada, Feb. 20, 1976, 246237
Int. Cl.[2] G09D *11/03*
U.S. Cl. 137—119 5 Claims



1. A fluid oscillator for producing pulsations in a flow of fluid comprising:

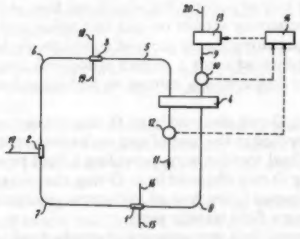
(a) a housing defining a fluid inlet channel, first and second similar fluid outlet channels each of which exhibits less resistance to fluid flow than the inlet channel, a valve chamber located between and communicating with said channels, the valve chamber including a surface defining first and second valve seats where the respective outlet channels meet the valve chamber, said inlet channel being adapted to be connected to a supply of fluid under pressure to direct this flow generally towards said surface and said outlet channels communicating with atmosphere;

(b) a freely movable spherical valve element contained loosely in said valve chamber and dimensioned to alternately engage said valve seats and seal the respective outlet channels, the valve seats being positioned adjacent one another and opposite said inlet channel whereby, with the valve element located on a first of the valve seats, fluid flowing towards the second of the outlet channels will entrap the valve element and move the element with this fluid on to said second valve seat whereupon fluid will then flow towards the first of the valve seats and then entrap the valve element to return the valve element to the first valve seat, such movements of the element being repeated as long as fluid flows so that fluid leaving by way of the first and second outlet channels will pulsate.

4,267,857
DUCT SYSTEM CONTAINING A MOVABLE PLUG BODY

Henry M. T. van Haaften, Aquamarijnstraat 793, Groningen, Netherlands

Filed Sep. 25, 1979, Ser. No. 78,673
Int. Cl.[3] A01G *27/00*
U.S. Cl. 137—119 37 Claims

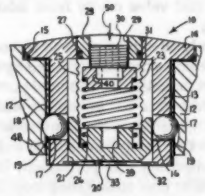


1. A duct system for a fluid which includes a main duct, a plug body within said main duct, means for supplying fluid to said main duct to create a predetermined pressure difference between the fluid pressure upstream of the plug body and the fluid pressure downstream of the plug body, which predetermined pressure difference is sufficient to move said plug body through said main duct, mutually cooperating means for retaining the plug body in a number of subsequent positions in said duct in opposition to said predetermined pressure difference, and release means for temporarily increasing the pressure difference between the fluid pressure upstream of the plug body and the fluid pressure downstream of the plug body, which increased pressure difference is sufficiently greater than said predetermined pressure difference as to operate on said mutually cooperating means to release the retained plug body, the improvement which comprises control means responsive to retention of said plug body at a particular position for actuating said release means after a certain retention time of the plug body at said particular position, allowing the plug body to move to the next of said subsequent positions by the fluid.

4,267,858
PRESSURE RELIEF VALVE

Oliver G. Lewis, Mountainside, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 8, 1980, Ser. No. 138,552
Int. Cl.[3] F16K *15/00*
U.S. Cl. 137—529 16 Claims



1. A pressure relief mechanism seated within a wall of a pressurized vessel, comprising:

a valve body having an inner bore, and at least two detent apertures opening into said bore;

at least two detents respectively seated within said apertures of said valve body and normally extending into, and engaging with, a recessed portion in said wall of said pressurized vessel to prevent said valve body from relieving the pressure in the vessel by disengaging from said vessel;

a piston disposed in said bore of said valve body and normally engaging with, and holding, said detents in their extended position with respect to said recessed portion of said vessel wall, said piston being movable past said detent apertures under the influence of a predetermined vessel pressure for disengaging said detents from said recess portion;

spring biasing means disposed in the bore of said valve body for compressively biasing said piston towards engagement with said detents; and

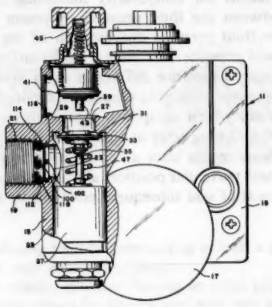
a flexible bellows exerting a compressive spring force against movement of the piston is disposed between said valve body and said piston for establishing a seal between said valve body and said piston, whereby when said piston is caused to move under the influence of said vessel pressure it will be urged against such movement by both said spring biasing means and the compressive spring force of said bellows.

4,267,859

PROTECTIVE INLET FOR GAS REGULATOR VALVE HOUSING

Theodore J. Dykzeul, Rolling Hills, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 23, 1979, Ser. No. 41,727
Int. Cl.[3] B01D 46/10
U.S. Cl. 137—550 6 Claims



1. In a gas valve which includes a housing having an internal valve cavity including valve means, and further having an inlet port for admitting gas to said valve cavity, improved means for preventing insertion of tools and the like into said valve cavity through said inlet port, said improved means comprising;

a screen having a peripheral portion mounted in said inlet port, and overlying the entire flow area of said inlet port for shielding said valve cavity from relatively small foreign particles;

a screen support located between said screen and said valve cavity and thereby exteriorly covered by said screen, said screen support including a peripheral portion, and further including a transverse bar portion extending across said inlet port and operative to block insertion of tools and the like into said valve cavity; and screen and support retaining means comprising first permanent, internal shoulder means in said inlet port constituting stop means for seating said peripheral portions of said screen and screen support and preventing inward movement of said screen and screen support toward said internal valve cavity.

4,267,860

LOAD RESPONSIVE VALVE ASSEMBLIES

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Continuation of Ser. No. 954,104, Oct. 24, 1978, abandoned, which is a continuation of Ser. No. 894,112, Apr. 17, 1978, Pat. No. 4,140,152, which is a division of Ser. No. 716,360, Aug. 20, 1976, Pat. No. 4,107,923. This application Jan. 4, 1980, Ser. No. 109,651
The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.
Int. Cl.[3] F15B 13/08
U.S. Cl. 137—596.2 11 Claims

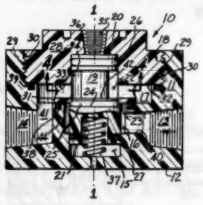
1. A load responsive valve assembly comprising a housing having fluid inlet means connected to a pump, at least one load chamber, and fluid exhaust means connected to reservoir means, first valve means for selectively interconnecting said fluid load chamber with said fluid inlet means and said fluid exhaust means, and pressurizing means of said fluid exhaust means having exhaust fluid throttling means interposed between said fluid exhaust means and said reservoir means and selectively operable to maintain a relatively constant pressure upstream of said pressurizing means, said pressurizing means having activating means responsive to pressure in said load chamber.

4,267,861

PLURAL MODULAR FLUID TRANSFER VALVES

Verlon C. Roth, Pasadena, Calif., assignor to RK Industries, Ontario, Calif.

Filed Nov. 5, 1979, Ser. No. 90,906
Int. Cl.[3] F16K 1/32, 27/02
U.S. Cl. 137—625.48 14 Claims



1. A fluid transfer valve combination comprising:

a rigid composition valve housing having a base and a coaxial aligned opposed inlet port and outlet port, and a hollow cylindrical interior having four stepped concentric cylindrical bores, said concentric bores comprising a deep base bore, a fluid transfer bore disposed above said deep base bore, an outlet base bore disposed above said transfer bore, and a screw cap retainer bore having screw threads disposed above said outlet base bore, each one of the stacked aforesaid concentric bores having a successively larger selected bore diameter on serially proceeding from said deep base bore to said screw cap retainer bore;

a cylindrical sealing solid piston having a first flat piston end face and an opposed second flat piston end face, and having at least one diametrically concentric fluid transfer channel disposed in and circumferentially around the piston cylindrical axis ajdacent to said first piston end face, said piston having a circumferential sealant shoulder disposed on the channel wall opposed said first flat piston end face, said shoulder suitable for sealing fluid flow;

plural sealing O-rings disposed in O-ring sealing channels each one of said O-rings separately concentrically disposed adjacent said first and second flat piston end faces and said at least one concentric fluid transfer channel, providing slidable fluid sealants on said piston;

a cylindrical screw cap having concentric screw threads is secured in said hollow cylindrical valve housing interior, said screw threads mating with the screw threads of the screw cap retainer bore, an interior integral cap collar secured to the screw cap interior face has multiple concentric radial apertures providing a connecting fluid flow path to a concentric cap bore disposed in said screw cap and diametrically sized to provide a close slidable linear alignment path for the slidable sealant of said first flat piston face, and a shoulder mating with said piston circumferential shoulder;

a first actuating means secured conductively to a valve housing face adjacent a first piston end face and disposed to cooperatively actuate on said first piston end face;

a second actuating means secured conductively to a valve housing face adjacent a second piston end face and disposed to cooperatively actuate on said second piston end face;

one sealing O-ring disposed in an O-ring channel concentrically disposed in the base of said outlet base bore adjacent to said fluid transfer bore, providing a fluid transfer seal;

one sealing O-ring disposed in an O-ring channel concentrically disposed in the base of said screw cap retainer bore, providing a fluid transfer seal;

a first internal fluid port connecting conductively said inlet port to said fluid transfer bore; and,

a second internal fluid port disposed in the base of said outlet

base bore connecting conductively said outlet base bore to said outlet port;

whereby actuating said first actuating means positions said first piston end face of said piston in an open valve position, providing an open fluid transfer path from inlet port, through said first internal fluid port, through said concentric fluid transfer channel disposed around said piston axis, through said fluid transfer bore, through said outlet base bore, through said second internal fluid port and through said outlet port,

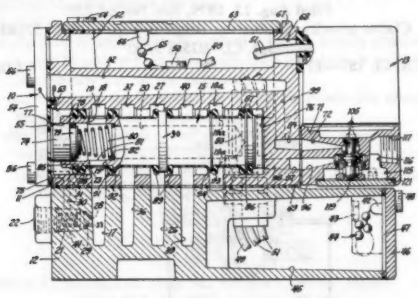
and whereby actuating said second actuating means positions said second piston end face in a closed valve position, positioning said piston in a sealing position, closing said at least one piston fluid transfer channel to fluid flow.

4,267,862

DIRECTIONAL CONTROL VALVE WITH FLOW PATH THROUGH VALVE SPOOL

James A. Neff, Bloomfield Township, Oakland County; Richard A. Fagerlie, Union Lake, and Walter J. Bowman, Detroit, all of Mich., assignors to Mac Valves, Inc., Wixom, Mich.

Filed Feb. 21, 1979, Ser. No. 13,387
Int. Cl.³ F15B *13/043*
U.S. Cl. 137—625.64 **11 Claims**



1. A directional control air valve having a valve body mounted on a base member a valve spool bore formed in the valve body in which a valve spool is movably mounted, the base member being provided with a pressurized air supply inlet port, an exhaust port, a first cylinder port and a second cylinder port, characterized in that:

(a) a first pressurized air supply chamber is formed in the wall of said valve spool bore, and a second pressurized air supply chamber is formed in the wall of said valve spool bore in a position longitudinally spaced apart from the first pressurized air supply port;

(b) said valve spool has a longitudinally disposed pressurized air flow chamber formed therein which is connected to said first and second pressurized air supply chambers, and to said pressurized air supply inlet port;

(c) an exhaust chamber is formed in the wall of said valve spool bore in an intermediate position between said first and second pressurized air supply chambers for connection to said exhaust port;

(d) a first cylinder chamber is formed in the wall of said valve spool bore in an intermediate position between said first pressurized air supply chamber and said exhaust chamber;

(e) a second cylinder chamber is formed in the wall of said valve spool bore in an intermediate position between said second pressurized air supply chamber and said exhaust chamber;

(f) said valve spool includes annular seal means at the ends thereof to seal said first and second pressurized air supply chambers from the end portions of the valve spool bore;

(g) a plurality of annular valve seal members are mounted around the periphery of the valve spool between the annular seal means, and in longitudinal position spaced apart from each other and from the annular seal means, for controlling the flow of pressurized supply air between the first and second pressurized air supply chambers and the first and second cylinder chambers, and the flow of exhaust air between the first and second cylinder chambers and the exhaust chamber; and,

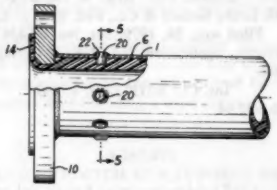
(h) said valve includes means for moving the valve spool to a first position to connect said first pressurized air supply chamber with said first cylinder chamber and said exhaust chamber to said second cylinder chamber, and to a second position to connect the second pressurized air supply chamber with the second cylinder chamber and said exhaust chamber to said first cylinder chamber.

4,267,863

TUBE REINFORCED WITH A SYNTHETIC MATERIAL

Jean Burelle, Courbevoie, France, assignor to Compagnie Plastic Omnium, Lyons, France

Filed Nov. 17, 1975, Ser. No. 632,704
Claims priority, application France, Nov. 19, 1974, 74 38043
Int. Cl.³ F16L *9/18, 57/00*
U.S. Cl. 138—109 **10 Claims**



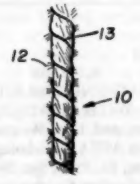
1. In a tube made from a synthetic plastic material surrounded by a continuous rigid tubular sheath, the ends of said tube of synthetic plastic material being formed with collars which project radially beyond said rigid sheath, the improvement which comprises means for preventing damage to said tube at said collars as a result of expansion and contraction of the tube with respect to said rigid sheath, said means comprising locking member fixed to said rigid sheath adjacent each collar and projecting radially inward from said sheath into a mating groove in the outer surface of said tube of synthetic plastic material.

4,267,864

FABRIC SUITABLE FOR MAKING SANDBAGS AND METHOD FOR MAKING THE SAME

Witold R. Kocay, Pomfret, Conn., assignor to Monsanto Company, St. Louis, Mo.

Filed May 29, 1979, Ser. No. 43,603
Int. Cl.³ D03D *15/00, 3/00*; D02G *3/02, 3/38*
U.S. Cl. 139—420 R **7 Claims**



1. The method for making fabric suitable for use in making sandbags, comprising weaving a fabric from a yarn made up of staple acrylic fibers wrapped with a continuous filament, said fibers having a length of 7 to 20 centimeters and a denier per

filament of about 10 to 15, said yarn having a total denier of about 200 to 2650, said continuous filament being of a type which is degraded by sunlight, said continuous filament being wrapped around the staple fibers in such a manner that hairiness of the yarn is reduced to the point where the yarn can be woven into fabric with a weaving efficiency of at least about 70%, said yarn being free of size during said weaving.

4. A woven fabric made from a yarn made up of staple acrylic fibers having a denier per filament of 10 to 15 and a total denier of about 200 to 2650 having a denier per filament of 5 to 15 and a total denier of from about 200 to about 2650, said fibers being wrapped with a continuous filament of a type which is degraded by sunlight, said staple fibers being wrapped in such a manner that fuzziness of the fibers is reduced to the extent that the yarn can be woven into said fabric at a weaving efficiency of at least about 70%.

4,267,865

APPARATUS FOR PRODUCING COILS

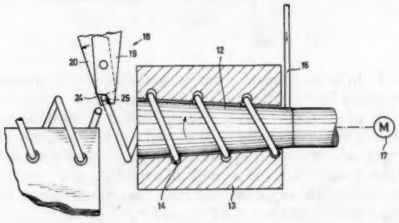
Guido Negro, Neuffen, Fed. Rep. of Germany, assignor to Bielomatik Leuze GmbH & Co., Fed. Rep. of Germany

Filed Aug. 24, 1979, Ser. No. 69,456

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2837946

Int. Cl.³ B21F *3/04, 45/00*

U.S. Cl. 140—92.94 **13 Claims**



1. An apparatus for producing coils in the course of a process for the production of binding coils which are to be introduced directly into a row of holes in a pack of sheets, the apparatus comprising:

a continuously driven, coil-forming winding spindle which is surrounded by the coil produced thereon;

means for cutting the coil; and,

means for periodically stopping the cut end of the forming coil, causing the coil to lift from the continuously driven spindle and interrupt the coil-forming process.

4,267,866

METHOD AND MACHINE FOR FILLING A CAPSULE WITH POWDER

Hans-Gunnar Larsson, and Erik Westman, both of Vesteras, Sweden, assignors to ASEA Aktiebolag, Vesteras, Sweden

Filed Aug. 31, 1979, Ser. No. 71,485

Claims priority, application Sweden, Sep. 6, 1978, 7809365

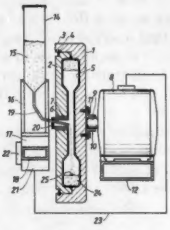
Int. Cl.³ B65B *1/14*

U.S. Cl. 141—1 **6 Claims**

1. A method of filling a capsule having a ring or disc-shaped cavity, comprising the steps of:

rotating the capsule around a horizontally positioned shaft;

feeding powder into the central portion of the cavity within the capsule; and



controlling the speed of rotation of the capsule such that the centrifugal force at the inner surface of powder within the capsule cavity is substantially equal to the force of gravity.

4,267,867

DEVICE FOR FIXING A WHEEL TO AN APPARATUS FOR FITTING AND REMOVING TIRES

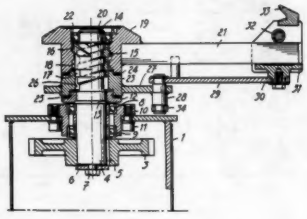
Francis du Quesne, 138, Cleistraat, 2630 Aartseloor, Belgium

Filed Aug. 13, 1979, Ser. No. 66,277

Claims priority, application Belgium, Sep. 1, 1978, 57248

Int. Cl.³ B25H *5/00*

U.S. Cl. 157—17 **6 Claims**



1. A device, for securing a wheel on an apparatus for fitting and removal of automobile tires, comprising:

(i) a support structure,

(ii) a drive shaft journalled in said support structure for rotation,

(iii) a head spaced about said shaft and having a plurality of arms,

(iv) a plurality of gripping jaws carried each on a respective one of said arms and movable radially towards and away from the head,

(v) a driven member spaced about said shaft,

(vi) a plurality of link means each connecting said driven member with a respective one of said jaws such that relative rotation of said driven member with respect to said head causes radial movement of said jaws,

(vii) a drive member disposed about said shaft and between said shaft and said head, said drive member being coupled in axially movable manner to said shaft and to said head, said drive member being keyed for rotation with but axially movable relative to said driven member,

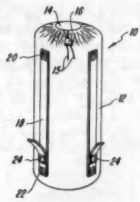
whereby, with a wheel disposed between said gripping jaws, rotation of said drive shaft relative to said head causes said drive member to be rotated with said drive shaft and thereby rotate said driven member relative to said head with radial inward movement of the gripping jaws to tighten against the wheel, whereafter further rotation of the drive shaft causes said drive member to shift said head axially and lock said head, drive member and driven member together to rotate in unison with said drive shaft.

4,267,868

COMPRESSIBLE STUFF SACK

Michael R. Lowe, Eldorado Springs, Colo., assignor to Lowe Alpine Systems, Inc., Lafayette, Colo.

Filed Oct. 29, 1979, Ser. No. 89,326
Int. Cl.³ B65D *33/00*
U.S. Cl. 150—11 **10 Claims**



1. A compressible stuff sack comprising:

a bag having opposite ends and of pliable material adapted to substantially assume a circular cross-section between the opposite ends;

an opening defined in the bag;

means to close the opening;

a plurality of spaced straps each of which is fixedly attached to the bag at two positions one each of which is adjacent an opposite end of the bag; and

means to vary the length of each strap between the attachment points of the strap to the bag;

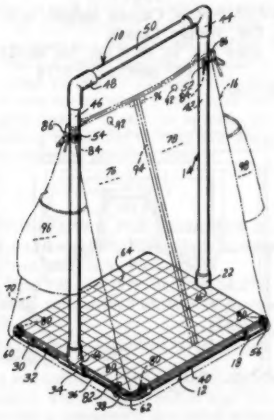
whereby, after filling the pliable bag with compressible items, the opening may be closed and additional compressive forces maintained by shortening the straps between the attachment points at the opposite ends of the bag.

4,267,869

HANDY BAG

Marvin L. Behar, 316 Main St., Edmonds, Wash. 98020

Filed Oct. 25, 1979, Ser. No. 88,164
Int. Cl.³ A45C *3/00*
U.S. Cl. 150—50 **5 Claims**



1. An article carrying device comprising a base and a closure means:

A. a base comprising:

1. a first tee, a second tee, a first short tube, a second short tube, a third short tube, a fourth short tube, a first long pipe, a second long pipe, a first connecting means, a second connecting means, a third connecting means and a fourth connecting means;
2. said first short tube connecting with said first connecting means and said first tee;
3. said second short tube connecting with said first tee and said second connecting means;
4. said first long pipe connecting with said second connecting means and said third connecting means;
5. said third short tube connecting with said third connecting means and said second tee;
6. said fourth short tube connecting with said second tee and said fourth connecting means;
7. said second long pipe connecting with said fourth connecting means and said first connecting means;

B. a handle means comprising:

8. a first upright leg connecting with said first tee and a fifth connecting means;
9. a second upright leg connecting with said second tee and a sixth connecting means;
10. a third long pipe connecting with said fifth connecting means and said sixth connecting means;

C. said closure means comprising:

11. a bottom support operatively connecting with said base for supporting articles;
12. a bag, operatively, connecting with said base to support said articles and to assist in positioning said articles on said base;

D. said bottom support having exterior dimensions larger than the interior dimensions of said base so as to rest upon and to be supported by members of said base; and,

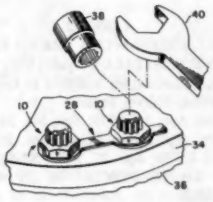
E. said bottom support being a solid sheet.

4,267,870

SCREW FASTENER WITH MULTI-POINT WRENCHING HEAD AND LOCKING CAPABILITIES

John R. Warner, Rocky River, Ohio, assignor to The Ferry Cap & Set Screw Co., Cleveland, Ohio

Filed Nov. 13, 1978, Ser. No. 959,523
Int. Cl.³ F16B *23/00, 39/10*
U.S. Cl. 411—98 **4 Claims**



1. A fastener construction having primary wrenching, secondary wrenching and locking capabilities comprising a multi-point wrenching fastener having a shank portion threaded at one end and having a normally non-shearable primary multi-point wrenching portion at the other end adapted for use with a multi-point wrenching tool, and an annular bearing collar portion, having an inner bearing surface, integral with said shank portion axially inwardly adjacent said multi-point wrenching portion, said collar portion having a greater cross-sectional area than said shank portion and including at least two flat chordal side surfaces on the outer periphery of said collar portion extending from said inner bearing surface substantially parallel to the axis of the fastener and to each other to define a secondary wrenching portion adapted for use with another type of wrenching tool, said primary wrenching portion being of lesser cross-sectional area than said secondary wrenching portion, and lock means engageable with any one of said flat chordal side surfaces of said collar portion for preventing rotation of said fastener when received in a bore in a member to be secured, said lock means including a thin elongate strip having an aperture for receiving the threaded end of said

fastener and including tab means adapted to be bent into flush engagement with any one of said flat chordal side surfaces of said collar portion for preventing rotation of said fastener relative to said elongate strip, and means for preventing rotation of said strip relative to the member being secured.

4,267,871

TIRE PROTECTOR CHAIN

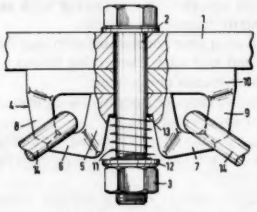
Erhard A. Weidler, Danziger Str. 32, Aalen-Unterkochen, Fed. Rep. of Germany (7080)

Filed Jan. 23, 1980, Ser. No. 114,644

Claims priority, application Switzerland, Feb. 2, 1979, 1030/79

Int. Cl.³ B60C *27/00*

U.S. Cl. 152—189 **11 Claims**



1. A tire protector chain comprising plate-shaped components which cover the tread of the tire that is to be protected, and which at least at their ends nearer the outer side of the tire are provided with connection devices for fastening a chain net covering the side wall of the tire, characterized in that the connection devices (**4**; **15**; **24**; **28**; **34**) are in the form of overload protection means which under the action of external forces free the chain net, or parts thereof, before the breaking strength of the chain links (**14**) is reached, in such a manner that no fragments are released.

4,267,872

VEHICLE TIRE WITH TREAD HAVING CIRCUMFERENTIALLY VARYING RIGIDITY

Tadashi Kamiya, Niiza, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,434

Claims priority, application Japan, Apr. 20, 1978, 53-47092; Apr. 21, 1978, 53-47526; Apr. 21, 1978, 53-53037[U]

Int. Cl.³ B60C *11/06, 11/14*

U.S. Cl. 152—209 D **6 Claims**

1. A vehicle tire comprising:

a tread portion having a plurality of projections on the surface thereof;

sidewall portions;

shoulder portions extending between said tread portion and said sidewall portions;

bead portions for fitting said tire to a wheel rim;

said tread portion including a plurality of first areas and a plurality of second areas;

said first areas having substantially high rigidity relative to said second areas and being adapted to yield by a relatively small degree radially inwardly of said tire when said first areas come into contact with a ground surface;

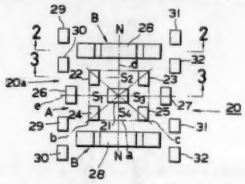
said second areas having a substantially low rigidity relative to said first areas and being adapted to yield by a relatively large degree radially inwardly of said tire when said second areas come into contact with a ground surface;

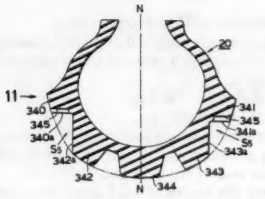
said first and second areas of said tread portion being alternately arranged in the circumferential direction of said tire;

said first areas each including a substantially elongated projection having the length thereof extending in the widthwise direction of said tire;

said second areas of said tread portion including a plurality of projections arranged substantially sparsely relative to said elongated projections in said first areas, so as to define relatively large spaces between said sparsely arranged projections of said second areas;

said elongated projection of said first areas having a relatively greater volume than the volume of said projections of said second areas;





first ones of said plurality of projections including outer surfaces facing widthwise of said tire and extending substantially parallel to a radial plane of said tire; and

second ones of said plurality of projections located outwardly widthwise of said first projections being provided with inner surfaces extending substantially perpendicular to said outer surfaces of said first ones of said projections.

4,267,873

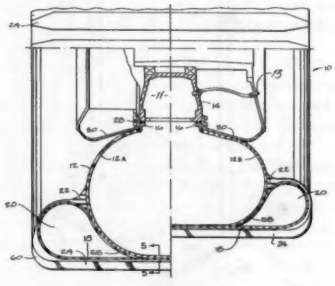
COMPOSITE HIGH MOBILITY TIRE FOR OFF-ROAD VEHICLES

Bruce J. McColl, Whitby, Canada, assignor to B. J. McColl & Company, Ltd., Whitby, Canada

Filed Jun. 15, 1979, Ser. No. 48,922

Int. Cl.³ B60C *5/06, 9/18*

U.S. Cl. 152—339 **12 Claims**



1. A high mobility tire for off-road vehicles, said tire comprising an inner torus having a pair of rigid flanges integrally formed on the inner periphery thereof for detachably securing the tire to a vehicle wheel; and an annular flexible tread belt bonded to the outer periphery of the inner torus, the tread belt comprising an annulus having both lateral extremities folded

inwardly to lie adjacent to the internal surface of the annulus and bonded between the inner torus and said internal surface, thereby defining a pair of hollow annular chambers on the peripheral side edges thereof, the belt being substantially wider than the inner torus with the latter nesting between said annular chambers.

4,267,874

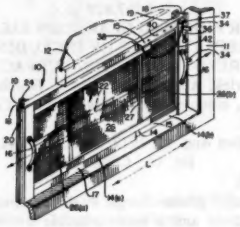
EXPANDABLE BURGLAR PROOF WINDOW

Clarence Pope, P.O. Box 472, Glassboro, N.J. 08020

Filed Mar. 1, 1979, Ser. No. 16,526

Int. Cl.³ E06B *3/32*

U.S. Cl. 160—92 **15 Claims**



1. An adjustable window guard and screen apparatus comprising:

an adjustable framework of two sections, said sections being slidably mated for expansion and contraction of said framework in the longitudinal dimension thereof;

a set of screen members, each of said screen members being affixed to an opposite framework section and in slidable relationship with each other for expansion or contraction thereof upon adjustment of same framework,

a plurality of adjustable bar members, each bar member having two slidably mating sections and each bar member section mounted to an opposite framework section, said bar members constructed for expansion and contraction with adjustment of said framework and further constructed to function as security guards,

one or more louver members, each of said louver members being in the form of two sections in slidably adjacent relationship to each other for slidable expansion and contraction with adjustment of said framework, each louver member mounted to a bar member, said bar member sections to which a louver member is mounted being rotatably mounted to said framework, said louver member affixed to said bar member so that said louver member rotates upon rotation of said bar member; and

louver operating means for rotating said bar member and said louver member mounted thereon.

4,267,875

SLIDING CLUTCH FOR VENETIAN BLIND

Marinus F. Koks, Rotterdam, Netherlands, assignor to Hunter Douglas International N.V., Netherlands

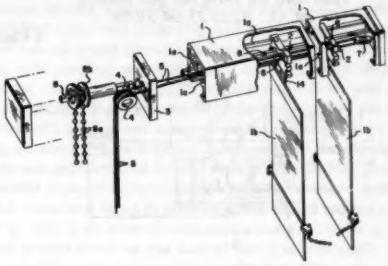
Filed Feb. 21, 1979, Ser. No. 13,278

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 2807440

Int. Cl.³ E06B *9/26*

U.S. Cl. 160—176 R **11 Claims**

1. A clutch mechanism for use in a venetian blind having at least one housing, a drive shaft, and at least one slat, which clutch mechanism is operatively connected between the drive shaft and said slat to rotate said slat about its longitudinal axis upon rotation of the drive shaft, the improvement comprising said clutch mechanism having a first part mounted for rotation in response to rotation of said drive shaft, said clutch also having a second part, said second part being operatively connected to said slat for rotation of such slat upon rotation of said second part, said first and second parts being mounted for relative movement with respect to each other, said housing including at least one resilient portion for resiliently imparting relative movement to said parts to effect driving engagement of parts with each other, and the resiliency of said resilient



portion being such as to yield to permit relative movement between said parts and in a sufficient amount to disengage said parts from driving engagement with each other upon the application of excess torque to said drive shaft and said first part.

4,267,876

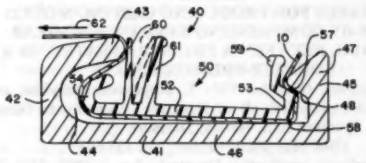
FILM FASTENING SYSTEM

Roger D. Bloomfield, Jackson, Wyo., assignor to Park Fastener Company, Colorado Springs, Colo.

Continuation of Ser. No. 950,998, Oct. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 792,660, May 2, 1977, abandoned. This application Dec. 5, 1979, Ser. No. 100,549

Int. Cl.³ A47H *13/00*

U.S. Cl. 160—392 **13 Claims**



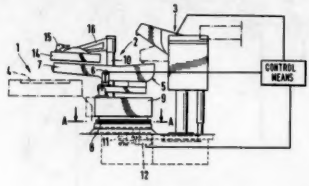
1. An apparatus for holding a flexible sheet of material in place comprising in combination an elongated substantially rigid channel member having a base wall and a pair of side walls extending generally parallel to each other and along the longitudinal length of said base wall, at least one of said side walls forming an overhanging ledge above and spaced from the base wall, an elongated flat relatively rigid locking strip having a width substantially greater than its height and having a pair of longitudinally extending edge portions which define the width thereof, the height of said locking strip being substantially less than the height of said channel side walls, a first edge portion of said locking strip being removably positionable under said overhanging side wall of said channel, and the second edge portion of said locking strip including a wall portion extending outwardly from said locking strip and having portions engaging a second side wall of said channel to form detent means tending to resist removal of said lock strip, and a cantilevered spring element fixed to said flat locking strip and spaced from said wall portion thereof and engaging a portion of said overhanging ledge of said channel and urging said wall portion of said strip to engage the second wall of said channel under a resilient force when the locking strip is in place in said channel adjacent the base of said channel.

4,267,877

APPARATUS FOR THE CONTINUOUS CASTING OF AN OBJECT OF PREDETERMINED WEIGHT OR SIZE

Matti O. Leiponen, and Ossi T. Tonteri, both of Espoo, Finland, assignors to Outokumpu Oy, Helsinki, Finland

Filed Nov. 30, 1978, Ser. No. 965,022
Int. Cl.[3] B22D *25/04, 39/04*
U.S. Cl. 164—155 1 Claim



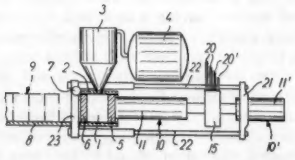
1. An apparatus for the continuous casting of a plate-like object of predetermined weight or size into low-rimmed open molds at the periphery of a rotating wheel, the apparatus comprising: at least one casting ladle fitted adjacent to the molds for pouring molten metal into the molds, the casting ladle having a spout and being fitted to swivel around a substantially vertical shaft, which shaft is inside the periphery of the wheel for movement of the ladle between two positions so that the spout of the casting ladle moves with the mold below during a casting cycle and then moves back to a position above the next mold before a next casting cycle; feeding means for filling the casting ladle with molten metal between castings; measuring means for determining the total weight of the casting ladle before and during casting; and control means for regulating the casting cycle on the basis of the measured total weight of the casting ladle, said casting ladle, measuring means and control means constituting a single swiveling unit.

4,267,878

APPARATUS FOR PRODUCING CASTING MOULD PARTS BY COMPRESSING SAND OR A SIMILAR MATERIAL BETWEEN A PRESSURE PLATE AND A COUNTER-PRESSURE PLATE

Vagn Mogensen, Gentofte; Villy E. Jorgensen, Olstykke, and Peter Krebs, Herlev, all of Denmark, assignors to Dansk Industri Syndikat A/S, Herlev, Denmark

Filed May 20, 1980, Ser. No. 151,607
Claims priority, application Denmark, Jun. 1, 1979, 2304/79
Int. Cl.[3] B22C *15/08*
U.S. Cl. 164—187 2 Claims



1. An apparatus for producing casting mould parts by compressing sand or the like between a pressure plate and a counter-pressure plate forming movable end walls of a pressure chamber which subsequent to the production of a mould part can be opened by displacing away the counter-pressure plate, whereafter the mould part can be pushed out from the pressure or squeeze chamber by a further movement of the pressure plate in its squeezing direction, both plates being movable by means of a respective one of two aligned hydraulic drive units each comprising a piston and a cylinder, and the counter-pressure plate being connected to the associated drive unit by means of pull and push rods arranged in parallel with the squeezing direction and an interconnecting cross member, whereas the pressure plate is directly connected to the other drive unit, said drive units comprising movable cylinder members connected to the cross member and to the pressure plate, respectively, and associated stationary piston members each having a piston rod extending tightly through an inner end wall of the associated cylinder member, and a piston head dividing the chamber of said cylinder member into an outer end compartment and an inner, annular compartment surrounding the piston rod, both compartments being provided with inlet and outlet connections for a pressure fluid.

4,267,879

METHOD FOR FORMING GLAUBER'S SALT CRYSTALS OF REDUCED SIZE BY INCLUDING A FLUORINE-CONTAINING SURFACTANT

Carlyle S. Herrick, Alplaus, and Fred F. Holub, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 21, 1979, Ser. No. 68,415
Int. Cl.[3] C09K *5/06*
U.S. Cl. 165—1 10 Claims

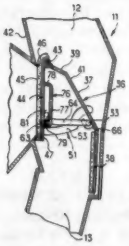
7. A liquid-solid phase-change mixture comprising sodium sulfate decahydrate and a water-miscible fluorine-containing surfactant selected from the group consisting of fluorine-substituted alkyl sulfonic acid, potassium salts of said acid, and mixtures thereof, said surfactant being included in an amount effective to limit the formation of sodium sulfate decahydrate crystals to an average size which is less than the average size of the crystals thereof which would be formed in the absence of said surfactant.

4,267,880

AIR DISTRIBUTION DEVICE

Maurice A. Jacquet, Maurepas, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Feb. 23, 1979, Ser. No. 14,566
Claims priority, application France, Feb. 24, 1978, 78 05406
Int. Cl.[3] F16K *11/18, 19/00;* B60H *1/24*
U.S. Cl. 165—41 11 Claims



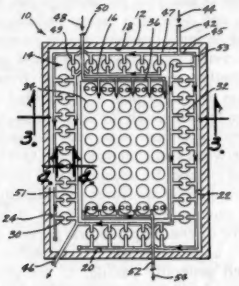
1. A device for distributing in a passenger space of a motor vehicle the air arriving from at least one channel into an inlet opening for two ducts, comprising a flap with two branches forming a V rotatably mounted on an axis, a first branch of the flap being able to control the opening and shutting off of the first duct, a second branch of the flap being able to control the opening and shutting off of the second duct, wherein a second flap is mounted on the edge of one of the branches of the V-shaped flap which is remote from the pivoting axis, means being provided for independently displacing said second flap when said one branch is in the shutting off position of the duct which it controls so as to control the opening and shutting off of the inlet opening.

4,267,881

HEAT STORAGE SINK

Cecil W. Byerly, R.R. 2, Box 917, Waukee, Iowa 50263

Filed Nov. 8, 1978, Ser. No. 958,674
Int. Cl.³ F28D *21/00*
U.S. Cl. 165—45 **4 Claims**



1. A storage system for heat and cold and exchange with a fluid from a solar collector, comprising,

a large block of earth material having a top surface, and vertical side walls, said side walls being defined by a perimeter trench adjacent said side walls, said perimeter trench being lined with moisture impervious material and filled with dry, particulate earth material,

an outer zone of vertical channels extending into said block of earth material, and

an inner zone of vertical channels extending into said block of earth material,

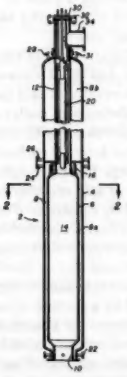
and filling each of said channels, a U-shaped conduit embedded in concrete material and connected for parallel passage of heat exchange fluid with the other U-shaped conduits of said zone to provide heat exchange between said fluid and said block of earth material.

4,267,882

HEAT EXCHANGER FOR COOLING A HIGH PRESSURE GAS

Gary W. Gralton, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Mar. 3, 1980, Ser. No. 126,227
Int. Cl.³ F28F *9/26*
U.S. Cl. 165—83 **6 Claims**



1. A heat exchanger for cooling a high pressure, hot gas having a first vertically elongated cylindrical pressure containment vessel, a second vertically elongated cylindrical pressure containment vessel coaxially disposed within said first vessel, the annular space between said first and second vessels forming a cooling water jacket about said second vessel, a gas inlet pipe penetrating through the bottom of said first vessel and extending upward therein to open into said second vessel through the bottom thereof, a gas outlet pipe penetrating through the top of said first vessel and extending downward therein to open into said second vessel through the top thereof, means for conveying cold cooling water into said cooling water jacket, and means for removing heated cooling water from said cooling water jacket; characterized by means for dividing the annular space into a lower and an upper cooling water jacket comprising an annular plate disposed horizontally in the annular space between said first and second vessels, said annular plate being welded along its outer circumference to the inner wall of said first vessel and being flexibly attached to said second vessel so as to slide at its inner circumference along the outer surface of said second vessel as said second vessel moves axially relative to said first vessel in response to thermal influences.

2. A heat exchanger for cooling a high pressure, hot gas comprising:

a. a first vertically elongated cylindrical pressure containment vessel;

b. a second vertically elongated cylindrical pressure containment vessel being of substantially shorter length than said first vessel, disposed coaxially within the lower portion of said first vessel;

c. a gas inlet pipe penetrating through the bottom of said first vessel and extending upward therein to open into said second vessel through the bottom thereof;

d. a gas outlet pipe penetrating through the top of said first vessel and extending downward therein to open into said second vessel through the top thereof;

e. means disposed in the annular space between said first vessel and said second vessel at a location immediately above the top of said second vessel for establishing a lower cooling water jacket in the annular space between said first and second vessels and an upper cooling water jacket in the annular space between said first vessel and said gas outlet pipe;

f. means for conveying cold cooling water into said lower cooling water jacket;

g. means for conveying heated cooling water out of said lower cooling water jacket;

h. means for conveying cold cooling water into said upper cooling water jacket; and

i. means for conveying heated cooling water out of said upper cooling water jacket.

4,267,883

COOLING TOWER

Jean Maurice, St. Germain de la Grange, and Raymond Quesnel, Massy, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Jul. 19, 1978, Ser. No. 926,210
Claims priority, application France, Jul. 22, 1977, 77 22596
Int. Cl.³ F24H *9/02*; B01F *3/04*
U.S. Cl. 165—129 **16 Claims**

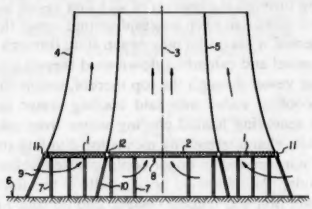
1. A cooling apparatus which comprises:

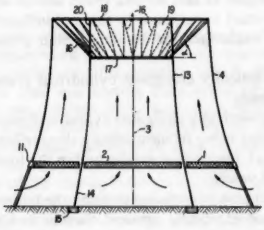
a dry type natural draft tower including an inlet;

an outlet;

a battery of thermal exchanges arranged on a straight cross-section of the tower at the base of the tower forming a plurality of separate and independent thermal exchange networks for uniformity of heat transfer wherein said networks are concentric with relation to the symmetrical axis of the tower; and,

means for separating said networks above the ground including an inner and outer concentric shell wherein said inner





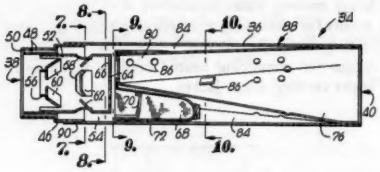
shell extends from and intersects said means for separating said networks.

4,267,884

HEAT RECOVERY DEVICE FOR USE IN RETURN AIR DUCT OF FORCED AIR FURNACE FOR RECOVERING HEAT FROM THE FLUE OF SUCH FURNACE

Fred J. Gary, R.F.D. #1, Box 164, Glasco, Kans. 67445

Division of Ser. No. 891,171, Mar. 29, 1978, Pat. No. 4,176,787.
This application Mar. 23, 1979, Ser. No. 22,972
Int. Cl.³ F28F 1/40
U.S. Cl. 165—179 **7 Claims**



1. Apparatus for increasing the transfer of heat from a first, heated gas flowing through a heat conductive, tubular member to a second, cooler gas in contact with external surface areas of said member, wherein only a predetermined portion of said first gas would typically flow into direct heat transferring contact with interior surface areas of said member opposite said external surface areas thereof in the absence of the provision of means for suitably modifying the otherwise normal flow and heat transferring utilization of the passage of said first gas through said member, said apparatus including:

gas flow dividing and deflecting means adapted to be disposed and supported within said member for proportionally dividing the flow of said first gas through said member into a first portion, greater than said predetermined portion, which is diverted and directed by said dividing and deflecting means outwardly toward and into heat transferring contact with said interior surface areas of said member for increased heating of said member and conduction of the increased heat thereby absorbed by said member to said external surface areas of said member in contact with said second gas for transfer to the latter, and a second, remaining portion, which is carried by and discharged from said dividing and deflecting means along a path spaced from said interior surface areas of said member and generally parallel to the direction of said normal flow of said first gas through said member,

said dividing and deflecting means including sleeve means for defining an inner conduit open at its upstream extremity for receiving said flow of said first gas, said sleeve means including wall means spaced from said interior surface areas of said member and provided with a plurality of apertures therethrough for defining an outer conduit in partial lateral communication with said inner conduit and disposed between said wall means and said interior surface areas of said member for receiving said first portion of said first gas through said apertures and laterally confining the same, said outer conduit being open at its downstream extremity for discharging said first portion of said first gas along a path adjacent to said interior surface areas of said member and generally parallel to the direction of said normal flow of said first gas through said member,

said dividing and deflecting means further including a plurality of deflecting vane means respectively operably associated with said apertures and extending into the interior of said sleeve means for diverting said first portion of said first gas from the flow of the latter entering said sleeve means and directing said first portion of said first gas outwardly through said apertures into said outer conduit and said heat transferring contact with said interior surface areas of said member,

said dividing and deflecting means further including means for restricting without fully blocking gas flow operably associated with said sleeve means adjacent the downstream extremity of the latter for increasing the pressure of said first gas within said inner conduit to increase the flow of said first portion of said first gas through said apertures into said outer conduit and said heat transferring contact with said interior surface areas of said member, while also providing sufficient clearance to gas flow to present said path for said discharge of said second portion of said first gas from the downstream extremity of said inner conduit.

5. In apparatus for transferring heat from flowing, heated, flue gas containing noxious products of combustion to cooler air to be heated and breathed, wherein said products of combustion are to be kept isolated from intermixing with said air:

a heat conductive, tubular member having an external surface in contact with said air, an internal surface, an inlet extremity for receiving a flow of said flow gas, and an outlet extremity for discharging said flow of said flue gas away from said air; and

a hollow, heat conductive, baffle structure mounted within said member and having a closed, upstream extremity facing said inlet extremity of said member, an open, downstream extremity facing said outlet extremity of said member and in communication with the latter, and a side wall having exterior and interior surfaces and provided with a plurality of openings therethrough,

said internal surface of said member being in the path of and directly contacted by a portion of said flow of said flue gas and constituting means for absorbing heat from the latter and conducting same to said external surface of said member for transfer to said air,

said exterior surface of said side wall being in the path of and directly contacted by a portion of said flow of said flue gas and constituting means for absorbing heat from the latter,

said internal surface of said member being in adjacent proximity to said exterior surface of said side wall and constituting means for receiving and absorbing heat radiating from said side wall and conducting the same to said external surface of said member for transfer to said air,

said exterior surface of said side wall being tapered outwardly toward said internal surface of said member as said downstream extremity of said structure is approached and constituting means for increasing the pressure of those portions of said flue gas in contact with said internal surface of said member and said exterior surface of said side wall and for deflecting an increased portion of said flow of said flue gas into direct contact with said internal surface of said member for increased absorption of heat by the latter and conduction of same to said external surface of said member for transfer to said air,

said side wall of said structure adjacent said downstream extremity thereof being in direct engagement with said internal surface of said member and constituting means for conducting further heat from said structure to said member through the zone of said direct engagement therebetween for conduction of same to said external surface of said member for transfer to said air,

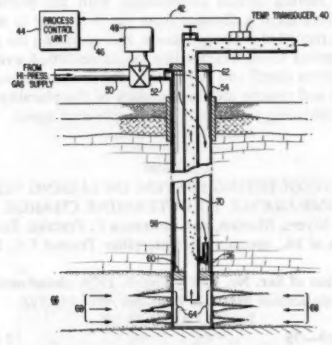
said openings of said side wall permitting ultimate passage of said flow of said flue gas into the interior of said structure and into direct contact with said interior surface of said side wall and constituting means for causing the absorption of further heat by the latter for transfer to said member by said radiation and said conduction for conduction of same to said external surface of said member for transfer to said air.

4,267,885

METHOD AND APPARATUS FOR OPTIMIZING PRODUCTION IN A CONTINUOUS OR INTERMITTENT GAS-LIFT WELL

Dorsey W. Sanderford, Lake Charles, La., assignor to Cybar, Inc., Calcasieu Parish, La.

Filed Aug. 1, 1979, Ser. No. 62,798
Int. Cl.[3] E21B *43/12*
U.S. Cl. 166—250 **16 Claims**



9. A method of improving the production of an oil well, comprising the steps of:

injecting a pressurized gas into the production tubing by the gas-lift technique; and

controlling the rate of injection of the gas based upon a predetermined relationship between the rate of injecting the gas and the monitored temperature of the liquid produced at the wellhead.

12. Apparatus for improving the production of an oil well, comprising:

injecting means for injecting a pressurized gas into the production tubing by the gas-lift technique; and

controlling means for controlling the rate of injection of the gas based upon a predetermined relationship between the rate of injecting the gas and the monitored temperature of the liquid produced at the wellhead.

4,267,886

LIGNOSULFONATES CARBOXYLATED WITH CHLOROACETIC ACID AS ADDITIVES IN OIL RECOVERY PROCESSES INVOLVING CHEMICAL RECOVERY AGENTS

George Kalfoglou, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 900,692, Apr. 27, 1978, Pat. No. 4,172,497, Ser. No. 745,495, Nov. 26, 1976, abandoned, Ser. No. 715,957, Aug. 19, 1976, abandoned, Ser. No. 591,573, Jun. 30, 1975, abandoned, and Ser. No. 591,574, Jun. 30, 1975, Pat. No. 4,006,779. This application Jul. 5, 1979, Ser. No. 54,774
The portion of the term of this patent subsequent to Oct. 30, 1996, has been disclaimed.
Int. Cl.[3] E21B *43/22*
U.S. Cl. 166—273 **4 Claims**

1. A method for recovering oil from a subterranean formation containing oil and having an injection well and a production well wherein aqueous solutions of surfactant and polymer are injected into the subterranean formation wherein the polymer increases the viscosity of the solution comprising:

(a) injecting through the injection well into the formation an aqueous solution of lignosulfonates carboxylated with chloroacetic acid whereby said chloroacetic acid reacts with phenolic, hydroxyl and sulfonate groups in said lignosulfonate to yield carboxylate groups,

(b) then injecting into the formation via the injection well an aqueous surfactant solution also containing lignosulfonates said lignosulfonates carboxylated with chloroacetic acid of steps (a) and (b) being present in amounts effective for reducing the extent of adsorption of surfactant and polymer by the formation matrix,

(c) subsequently injecting into the formation via the injection well an aqueous solution of polymer wherein the polymer increases the viscosity of the solution and

(d) producing oil from the formation via the production well.

4,267,887

METHOD FOR ACIDIZING HIGH TEMPERATURE SUBTERRANEAN FORMATIONS

David J. Watanabe, Orange, Calif., assignor to Union Oil Company of California, Brea, Calif.

Continuation-in-part of Ser. No. 14,054, Feb. 22, 1979, Pat. No. 4,203,492, which is a continuation-in-part of Ser. No. 885,450, Mar. 10, 1978, Pat. No. 4,148,360. This application Mar. 24, 1980, Ser. No. 133,275
Int. Cl.[3] E21B *43/26, 43/27*
U.S. Cl. 166—300 **18 Claims**

1. A method for acidizing a subterranean formation having a temperature above about 250° F., which comprises:

(a) introducing a substantially anhydrous foamed treating fluid through a well into said formation, said treating fluid consisting essentially of (1) a gas, (2) a nonionic substantially hydrophobic foaming agent and (3) one or more normally liquid acid precursors having a generalized formula:

$$C_xH_yX_z$$

wherein X represents one or more halogens;
$x=1$ or 2;
$y=0$, 1 or 2, but $y \leqq x$; and
$z=2x-y+2$,
and which is thermally stable under the temperature and pressure conditions to which it is exposed prior to hydrolysis; and

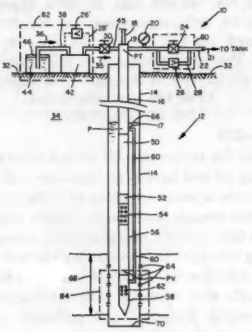
(b) allowing said acid precursor to hydrolyze in situ to generate a hydrohalic acid which reacts to increase the permeability of said formation.

4,267,888

METHOD AND APPARATUS FOR POSITIONING A TREATING LIQUID AT THE BOTTOM OF A WELL

Mortimer Singer, 2320 Plaza del Grande, Las Vegas, Nebr. 89102

Filed Nov. 15, 1979, Ser. No. 94,381
Int. Cl.[3] E21B *37/00*
U.S. Cl. 166—312 11 Claims



10. In an oil well having at least a string of tubing, a standing valve, a sucker rod pump, and a string of sucker rods;

an opening in said tubing above said sucker rod pump, said opening connected to an overpressure valve positioned below the intake of said sucker rod pump, said over-pressure valve set to open at a selected fluid pressure PV=P+P1 on its inlet; where P is the normal hydrostatic pressure in the tubing at said opening, and P1 is a selected small value of pressure;

the method of positioning a selected first volume of a selected first liquid in the bottom of said well without disturbing said pump, rods, tubing or standing valve, comprising the steps of;

(a) with said sucker rods not pumping, closing off the top end of said tubing string;

(b) injecting at least said selected first volume of a selected first liquid into the top of said tubing string, at a selected pressure P2 above atmospheric pressure, where P2>P1, and where the sum of P2 plus P the normal pressure head of liquid in said opening is greater than PV=P+P1;

whereby said first overpressure valve will open and discharge an equal volume of liquid through said opening.

4,267,889

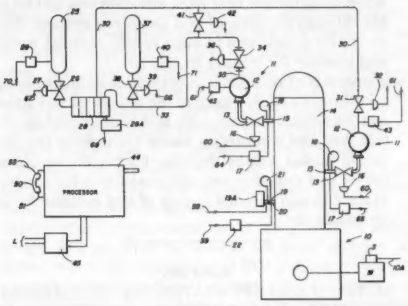
EXPLOSION SUPPRESSION SYSTEM FOR FIRE OR EXPLOSION SUSCEPTIBLE ENCLOSURE

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Continuation-in-part of Ser. No. 973,679, Dec. 27, 1978, abandoned. This application Apr. 26, 1979, Ser. No. 33,433
Int. Cl.[3] A62C *37/18*
U.S. Cl. 169—61 19 Claims

1. A fire and explosion suppression system for protecting an enclosure against destructive forces comprising: sensor means for sensing the initiation of a condition in the enclosure which if unchecked can cause destruction to the enclosure; a container for a fire and explosion suppression agent; a connection between said container and the enclosure including a valve normally closed and operable to release the entire charge of the agent in said container into the enclosure; processor means interconnecting said sensor means and said normally closed valve for opening said valve upon said sensor means sensing a condition associated with the advent of destructive forces that can cause destruction to the enclosure, the opening of said normally closed valve releasing the entire charge of agent to the enclosure through said connection; a source of suppression agent; means connecting said source of suppression agent to said container; a source of pressurizing medium; means connecting said source of pressurizing medium to said container for pressurizing said agent therein; operating connections between said sources of agent and medium and said processor means for effecting selectively the initial charging and the recharging of agent into said container and admitting medium for repressurizing the agent therein; and means for examining said processor means for determining the functional condition of the system.

16. A method of examining the functionality of a plurality of agencies associated with a protection system for a closed space in which fire and the pressure rise associated with an explosion may occur by reason of a flame front raising the pressure



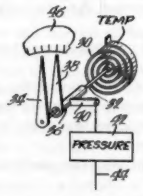
within the closed space, said method comprising: continuously monitoring the closed space for the existence of a destructive condition; sensing the conditions in the closed space; completely releasing to the closed space a pressurized suppression agent at high speed to effect the protection of the closed space; recording the event of the release of the suppresion agent in a processor having circuit connections with the plurality of agencies; located at a distance from the processor to monitor the events recorded in the processor; and operating the processor to respond to an examination of its recorded events, to effect a system check and to recharge the pressurized suppresion agent and restore the functionality of the plurality of the agencies following a release of the suppression agent.

4,267,890

FIRE EXTINGUISHING SYSTEM INCLUDING SENSOR COMPARABLE TO DETERMINE CHARGE

Jimmy D. Myers, Morton, and Lawrence F. Fratzke, East Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 8,982, Feb. 5, 1979, abandoned. This application May 12, 1980, Ser. No. 149,193
Int. Cl.[3] A62C *23/08*
U.S. Cl. 169—75 7 Claims



1. In a fire extinguishing system including a pressure vessel (10) adapted to contain under pressure a fire extinguishing material, means (12,14,16) connected to said vessel and selectively operable to release the pressurized fire extinguishing material therefrom, a pressure sensing device (42) in fluid

communication with the interior of said vessel and having a visual indicator (38) and a temperature sensing device (30) mounted in fixed association with said vessel for determining the temperatures in the environment of said vessel and having a visual indicator (34), the improvement comprising

the provision of a single scale (46) associated with said visual indicators providing a visual comparison of the two visual indicators to indicate whether the system is properly charged over a wide range of ambient temperatures, said first indicator indicating the pressure sensed by said pressure sensing device and said second indicator indicating the temperature sensed by said temperature sensing device, said visual indicators comprising needles mounted for rotation about a single axis.

4,267,891

SOIL CULTIVATING MACHINES

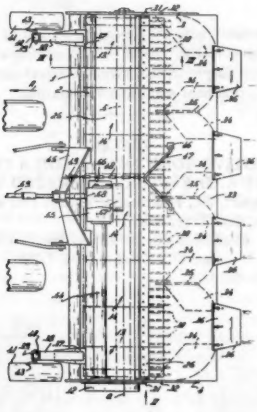
Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

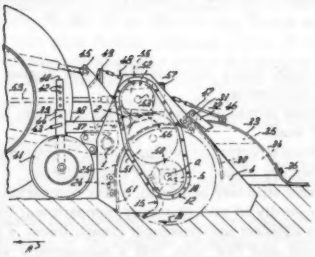
Filed May 31, 1977, Ser. No. 801,626

Claims priority, application Netherlands, Feb. 28, 1977, 7702108

Int. Cl.³ A01B *17/00, 49/04*

U.S. Cl. 172—28 **7 Claims**





1. A soil cultivating machine comprising a frame and a plurality of soil working members being mounted on elongated support means on said frame, said support means being rotatable about a horizontal transverse axis and driving means engaging said support means, said soil working members being arranged in spaced apart groups along the length of said support means and crop strikers being positioned on said support means between successive groups of soil working members, spaced apart convergent pairs of guide members being located rearwardly of said groups of soil working members with respect to the normal direction of machine travel and openings being formed between said pairs, said crop strikers being located in front of the openings between the pairs of guide members and said guide members being positioned to engage crop displaced by said crop strikers and soil working members to deposit same in swathes, said support means being an elongated substantially horizontal support which, together with said working members is partially surrounded by a screening hood, the leading edge of said hood being located below the longitudinal axis of said support, said leading edge having opposite ends with screening plates and said screening plates having obliquely upwardly and inwardly inclined inner edges.

4,267,892

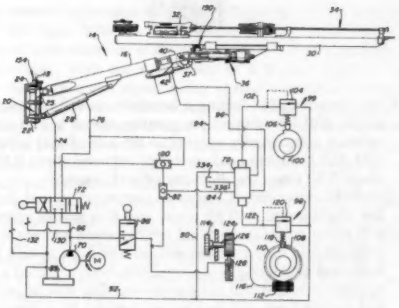
POSITIONING CONTROL SYSTEM FOR ROCK DRILL SUPPORT APPARATUS

James R. Mayer, Englewood, Colo., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Apr. 30, 1979, Ser. No. 34,211

Int. Cl.³ E21C *1/00;* **F15B** *15/00*

U.S. Cl. 173—43 **5 Claims**

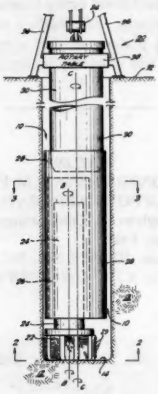


1. In a rock drill apparatus a drill boom mounted on a boom support for pivotal movement about a first pivot axis, an elongated drill feed bar mounted on said boom for pivotal movement with respect to said boom about a second pivot axis, a rock drill mounted on said feed bar and adapted to actuate an elongated drill stem, a first boom actuator for moving said boom pivotally about said first axis, a first feedbar actuator for effecting pivotal movement of said feed bar about said second axis, said first boom actuator and said first feed bar actuator being pressure fluid operated, a pressure fluid control circuit including a source of pressure fluid, valve means operable at will to cause said first boom actuator to move said boom about said first axis, a control valve for supplying pressure fluid to said first feed bar actuator, means including a first sensing device comprising a cam and a cam follower which are relatively moveable in response to pivotal movement of said boom to cause said control valve to effect a predetermined amount of pivotal movement of said feed bar about said second axis in response to movement of said boom about said first axis, and means for producing relative movement between said cam and said cam follower to cause said control valve to effect pivotal movement of said feed bar about said second axis independent of movement of said boom about said first axis said means for producing relative movement between said cam and said cam follower includes a gear connected to said cam and adapted to rotate said cam with respect to said cam follower, and gear operating means for rotating for said gear and said cam at will to effect pivotal movement of said feed bar by the operation of said control valve.

4,267,893
DUAL-ROTATING ECCENTRIC DRILLING APPARATUS AND METHOD

Alfred T. Mannon, Jr., Santa Maria, Calif., assignor to Union Oil Company of California, Brea, Calif.

Filed Aug. 27, 1979, Ser. No. 69,797
Int. Cl.³ E21B *4/02*
U.S. Cl. 175—65 **19 Claims**



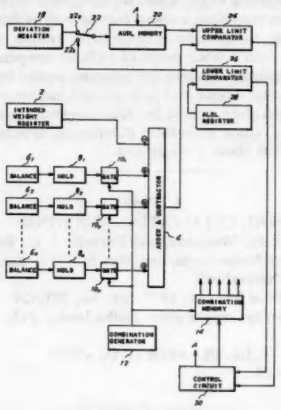
1. An apparatus for drilling a borehole, which comprises:
a single drill bit adapted for rotation about a first axis of rotation substantially parallel to the axis of said borehole, said drill bit having a diameter of between about 0.55 and about 0.90 times the diameter of said borehole;
downhole motor means operably connected to said drill bit for rotating said drill bit about said first axis of rotation;
a drill string connected to said motor means and adapted to suspend said motor means and said drill bit in said borehole, said drill string being rotatable about a second axis of rotation substantially parallel to said first axis of rotation and spaced from said first axis of rotation by a distance of about 0.5 times the difference between the diameter of said borehole and the diameter of said drill bit; and
rotary means for rotating said drill string about said second axis of rotation and thereby rotate said drill bit in a planetary motion about said second axis of rotation.

4,267,894
COMBINATION WEIGHING DEVICE

Takashi Hirano, Kobe, and Takashi Aga, Akashi, both of Japan, assignors to Yamato Scale Company, Limited, Hyogo, Japan

Filed Dec. 12, 1979, Ser. No. 102,660
Claims priority, application Japan, Dec. 12, 1978, 53-171151[U]
Int. Cl.³ G01G *19/62*
U.S. Cl. 177—25 **2 Claims**

1. A combination weighing device comprising an intended weight register for storing a predetermined intended value of weight, a plurality of weighing balances for weighing a plurality of articles to be weighed, respectively, and producing weight outputs representative of the respective measured weights, an arithmetic unit for receiving said weight outputs and the content of said intended weight register to produce a deviation output representative of the difference between the sum of said measured weights and said intended weight, a plurality of normally-open switches inserted respectively between said weighing balances and said arithmetic unit, each of said switches having a control input, switch control means coupled to said control inputs of said swithces for selectively closing said switches in accordance with a plurality of predetermined combinations, a deviation memory for storing an allowable deviation with reference to said intended weight, a comparator for comparing said deviation output from said arithmetic unit with the content of said deviation memory and producing an output when said deviation output is within said allowable deviation, means for updating the content of said

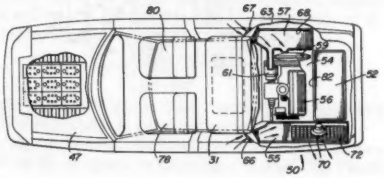


deviation memory with the deviation output of said arithmetic unit in response to the output of said comparator, and means for storing the output of said switch control means at the time when said comparator produces said output.

4,267,895
AUTOMOTIVE BODY FRAME FOR A COMBINED ENGINE AND BATTERY OPERATED VEHICLE

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed May 10, 1979, Ser. No. 37,693
Int. Cl.³ B60K *11/04, 7/00*
U.S. Cl. 180—54 A **6 Claims**



1. A body frame structure for a rear engine automotive vehicle comprising:
(a) means providing a passenger compartment for front and rear seats,
(b) a front structure providing a front compartment disposed forwardly of said passenger compartment,
(c) a rear structure providing a rear compartment disposed rearwardly of said passenger compartment having a first area adjacent said passenger compartment, a second area behind said first area, and a substantially vertical wall structure therein for separating said areas;
(d) said rear structure comprising a pair of side quarter panels providing side walls for said rear compartment and having rear wheel housings therein for accommodating rear wheels of said vehicle, vent openings extending outwardly from each of said quarter panels for receiving outside air, and ventilation plenums extending from each of said vent openings, disposed and extending along opposite sides of the area for receiving said engine;
(e) said rear wheel housings being disposed rearwardly away

from said rear seat in said passenger compartment beneath said rear compartment, and

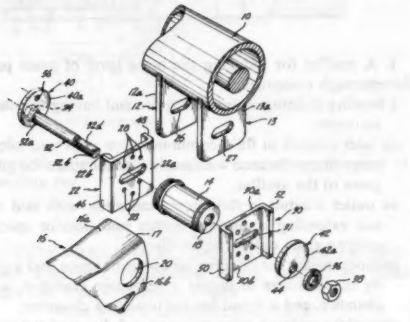
(f) means provided in said first area for receiving said rear engine in substantial transverse alignment between said rear wheel housings, and said second area adapted to provide storage space for luggage.

4,267,896

METHOD AND APPARATUS FOR ALIGNING AUTOMOBILE SUSPENSION MEMBERS

Errol C. Hendriksen, 29200 45th Ave. South, Auburn, Wash. 98002

Filed Feb. 4, 1980, Ser. No. 118,556
Int. Cl.³ B60G 9/00
U.S. Cl. 180—73 R **7 Claims**



1. In a suspension system for an automobile having a frame member and a rear axle housing, said frame member being suspended on said rear axle housing by a coil spring and having at least one lower control arm interposed between said frame member and said rear axle housing, a first end of said lower control arm being pivotally attached to said rear axle housing and a second end of said lower control arm being pivotally attached to said frame member, the improvement comprising a linearly adjustable connection for attaching said lower control arm to said rear axle housing, said improved linearly adjustable connection comprising:

a cam plate affixed to said rear axle housing, said cam plate lying in a substantially vertical plane substantially orthogonal to said rear axle housing and having an elongate slot formed therein, the elongate dimension of said slot being substantially parallel to the fore/aft axis of said automobile, said cam plate further including a pair of elongate flanges extending orthogonally from a first surface of said cam plate in substantially parallel spaced relation, the elongate dimension of said flanges being orthogonal to the elongate dimension of said slot, said slot being interposed between said flanges;

a mounting pin positioned within said slot and within a mounting hole formed in said first end of said lower control arm;

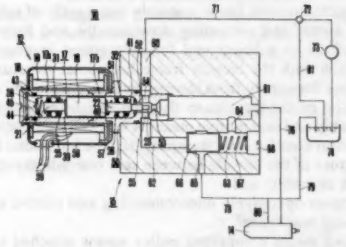
a circular planar cam member eccentrically mounted on said pin orthogonal to the elongate dimension of said pin, a first surface of said cam member abutting said first surface of said cam plate, said cam member being positioned between said flanges, said cam member being mounted on said pin in such a manner that the pin and cam member rotate in unison with one another, said cam member, pin and cam plate cooperating such that planar rotation of said cam member causes a linear movement of said pin within said slot to change the spatial relation between said first end of said lower control arm and said rear axle housing.

4,267,897

ELECTRO-MECHANICAL CONVERTERS AND CONTROL APPARATUS FOR POWER STEERING UNITS UTILIZING THE SAME

Sadao Takeshima, Higashimatsuyama, Japan, assignor to Jidosha Kiki Co. Ltd., Tokyo, Japan

Filed Feb. 21, 1979, Ser. No. 13,717
Claims priority, application Japan, Feb. 20, 1978, 53/19639[U]; Feb. 20, 1978, 53/19640[U]
Int. Cl.³ B62D 5/08
U.S. Cl. 180—143 **5 Claims**



1. In control apparatus for a power steering unit of a motor car of the type wherein a plunger contained in a cylinder having an inner diameter is moved in the axial direction thereof in accordance with the magnitude of a speed signal of the motor car, said speed signal being passed through a solenoid coil wound about said cylinder, and the amount or pressure of operating fluid supplied to said power steering unit is controlled by a control valve operated by said plunger, the improvement wherein the outer diameter of said plunger is less than said inner diameter such that said plunger can move freely within said cylinder without causing undue sliding friction therebetween, said plunger including a pair of substantially coaxial guide rod portions having an outer diameter less than said outer diameter of said plunger located at opposite ends thereof to minimize transaxial rotation of said plunger, and further including a pair of bearing members each associated to a different one of said pair of guide rod portions, each said bearing member comprising a plurality of rotatable bearing elements arranged for rolling movement between the associated one of said guide roll portions and said inner diameter of said cylinder, keeper means having an aperture arranged about said associated guide rod portion for translational movement therealong and having a plurality of bearing element apertures for receiving said bearing elements, and spring bias means for applying a first biasing force between the adjacent end of said plunger and said keeper means and a second biasing force between said keeper means and the adjacent end of said cylinder for reducing linear motion of said bearing elements along the axis of said cylinder in response to plunger movement therealong by a predetermined amount, said plunger being supported in said cylinder by said rotatable bearing elements.

4,267,898

MOTORIZED BICYCLE CONVERSION APPARATUS

George B. Wheaton, 147 Long Dr., SW., Marietta, Ga. 30060

Filed Dec. 10, 1979, Ser. No. 101,418
Int. Cl.³ B62M 7/08
U.S. Cl. 180—205 **2 Claims**

1. Motorized propelling apparatus for attaching a motive means to the frame structure of a bicycle, said apparatus comprising in combination:

a frame assembly configured to fit above the conventional rear wheel of a bicycle;

said frame assembly comprising a rear portion to receive and support said motive means above the bicycle rear wheel, and a forward portion extending forwardly from said rear portion to be disposed in proximity to bicycle frame struc-

ture extending downwardly and rearwardly from beneath the bicycle seat to the rear wheel attachment of the bicycle frame;

attachment means operatively associated with said forward portion of said frame assembly to securely engage the bicycle frame, thereby securing said frame assembly in position above the bicycle rear wheel;

motive means mounted on said frame assembly in position substantially above the axis of rotation of the rear wheel;

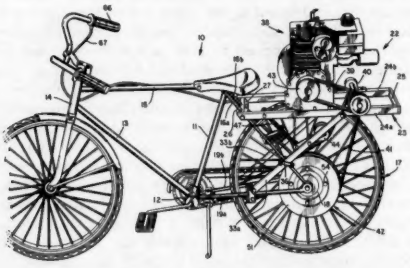
side brace means securely engaging the bicycle frame structure extending horizontally rearwardly from the bicycle crank housing to the rear wheel attachment;

said side brace means comprising a pair of strut members connected to said frame assembly rearwardly of said motive means and extending downwardly and forwardly therefrom to a lower end for securement in proximate location with the bicycle frame horizontal structure extending forwardly from the rear wheel toward the crank housing of the bicycle, so that the weight of said frame assembly and said motive means is vertically supported by said strut members and transmitted to the horizontal frame structure of the bicycle between said rear wheel and said crank assembly; and

drive means operatively interconnecting said motive means and said rear wheel;

said drive means comprising pulley means attached to the rear wheel of the bicycle;

said pulley means comprising a driven member operatively



connected to said motive means and positioned on the outside of the rear wheel spokes;

means disposed within said spokes and operatively engaging the hub of the rear wheel;

means extending between said wheel spokes to operatively interconnect said drive means and said hub engaging means, so that the rear wheel is rotated in response to rotation of said driven member by said motive means;

said hub engaging means being diametrically split to define a pair of clamp members each having a smooth arcuate hub engaging surface configured to provide a complementary fit on the circumference of said hub of the bicycle rear wheel;

connecting means engaging each of said clamp member to draw said hub engaging surfaces into frictional engagement against the circumference of the hub;

said means extending between the wheel spokes to interconnect the drive means and the hub engaging means comprising a plurality of bolts engaging said clamp members and extending between the spokes of the bicycle rear wheel to engage said driven member; and

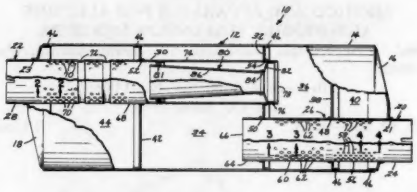
means protruding between said driven member and said clamp members, and also extending between said rear wheel spokes, to limit the extent to which the clamp members and driven means can be drawn together, so as to prevent damage to the spokes and the hub of the rear wheel as the clamp members and the driven member are drawn into mutual engagement by said fasteners and said bolts.

4,267,899

MUFFLER ASSEMBLY

Wayne M. Wagner, Apple Valley, and David E. Winnes, Bloomington, both of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Filed Aug. 31, 1979, Ser. No. 71,542
Int. Cl.³ F01N *1/08*
U.S. Cl. 181—272 **14 Claims**



1. A muffler for reducing the noise level of gases passing therethrough comprising:

a housing defining an interior space and having an inlet and an outlet;

an inlet conduit in fluid communication with said inlet and extending a distance within said interior space for guiding gases to the muffler;

an outlet conduit in fluid communication with said outlet and extending a distance within said interior space for guiding gases out of the muffler;

partition means for dividing said interior space into a plurality of chambers including a resonator chamber, a flow chamber, and a broad band attenuation chamber;

said inlet conduit having an open end disposed within said resonator chamber and a plurality of flow holes through it for providing fluid communication between said inlet and said flow chamber;

said outlet conduit having an open end disposed within said flow chamber for guiding gas from said flow chamber to said outlet; and

one of said inlet and outlet conduits passing through said attenuation chamber and having a field of attenuation holes through it for providing fluid continuity to said attentuation chamber so that broad band sound attenuation can occur therein.

4,267,900

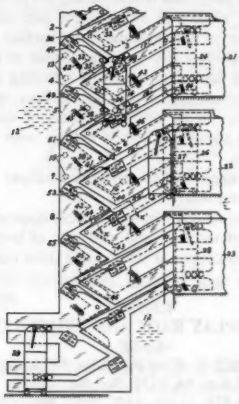
EMERGENCY ESCAPE SYSTEM

Yang Yin-Lung, P.O. Box 865, Kaohsiung,Taiwan

Filed Jul. 24, 1979, Ser. No. 60,134
Int. Cl.³ A62B *1/02, 3/00*
U.S. Cl. 182—13 **3 Claims**

1. A loader car for emergency escape used with a vertical zigzag track for multistory building comprising two parallel axles perpendicularly and firmly fixed at the upper and the lower end back side of the car in a same distance between said axles as the distance between any two similar points of the track for supporting and traveling the car with two axles on the track simultaneously, the track is formed by a plurality of special contour structures, each structure having three plies of plate mounted in parallel relationship adjacent to outside wall of the building and having a plurality of parallel branch tracks extending laterally and slightly upwardly from the vertical track to an exit tunnel at each floor of the building, means

provided between the parallel plates of the track for automatic sequence control of the traveling cars, a spring damper located



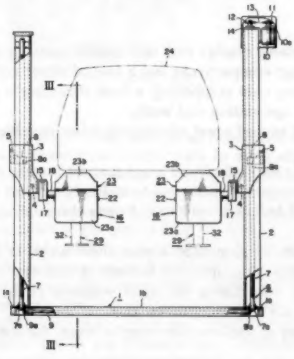
at each turning point of the track for dampening the speed of the traveling car.

4,267,901

DUAL TYPE FREE-WHEEL/DRIVE-ON VEHICLE LIFT

Tozaburo Tsujimura, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Mar. 8, 1979, Ser. No. 18,071
Claims priority, application Japan, Oct. 4, 1978, 53-122348
Int. Cl.³ B66F *7/00*
U.S. Cl. 187—8.54 **5 Claims**



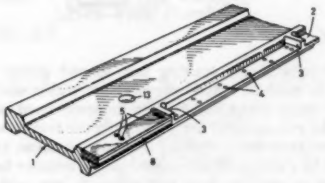
1. A vehicle lift comprising:
(a) a pair of support pillars;
(b) a carriage which moves up and down relative to each of the support pillars;
(c) a supporting ramp, adapted to support a vehicle by its tires, said supporting ramp being coupled to each of the carriages; and
(d) an underbody support coupled to each supporting ramp comprising an underbody contact member and a plurality of supporting legs pivoted to the underside of the underbody contact member which extend through holes in the support ramp in such a manner that when extended they project vertically downward and when folded they are substantially horizontal, said supporting legs being adapted to be held in the horizontal position by removable pins when folded, at least one of the support ramps being coupled to the respective carriage in a manner to be adjustably moved transversely so as to adapt its distance from the other support ramp to the width of various vehicles, whereby the supporting legs when unfolded support the underbody of the vehicle when the supporting ramps are lowered and the free ends of the supporting legs contact the ground, and continued lowering of the supporting ramps permits separation of the supporting ramps from the vehicle and thereby results in the vehicle being solely supported by the supporting legs.

4,267,902

RAILWAY CAR RETARDER

Hans-Rudolf Schüpbach, Rosshäusern, and Eric J. Rathe, Russikon, both of Switzerland, assignors to Schweizerische Bundesbahnen (Bauabteilung der Generaldirektion), Bern, Switzerland

Filed Oct. 5, 1979, Ser. No. 82,028
Claims priority, application Switzerland, Nov. 16, 1978, 11793/78
Int. Cl.³ B61K *7/04*
U.S. Cl. 188—62 **3 Claims**



1. A railway car retarder comprising:
two elongated brake beams for location on opposite sides of a track rail and running parallel with the rail,
the longitudinal side of each beam facing the rail having a longitudinal recess therein with a substantially horizontal bottom wall and vertical rear wall, the bottom wall of the recess being broader than the height of the rear wall of the recess,
the recess of each beam having a plurality of longitudinally spaced web ribs extending upwardly from the bottom wall of the recess and running transversely to the longitudinally axis of said recess to divide the recess into a plurality of adjacent compartments,
a braking shoe for each beam formed by a plurality of segments, each said segment fitting within a respective compartment of said recess and resting against the bottom and rear walls thereof with the web ribs at the ends of said compartments forming longitudinal support for said segments, a lateral surface of the segments of each brake shoe extending inwardly of the beam toward the rail such that a braking groove is formed between the brake shoes to engage the wheels of a rail car passing in the groove,
and means passing through said segments and extending perpendicular to the bottom wall of said recess for removably fastening each segment in a respective compartment.

4,267,903

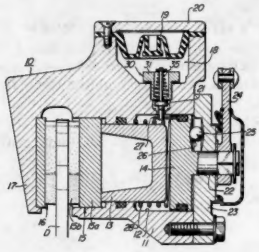
DISK BRAKE APPARATUS FOR MOTOR VEHICLE

Yasuo Kita, and Yukinori Nishiyama, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 3, 1979, Ser. No. 743
Claims priority, application Japan, Jan. 19, 1978, 53-4848
Int. Cl.³ F16D *55/26*
U.S. Cl. 188—72.6 **7 Claims**

1. A hydraulically operated disk brake apparatus for motor vehicles comprising a brake disk, a caliper-like brake housing having a pair of caliper arms and disposed to straddle over said brake disk, a pair of brake pad assemblies disposed in said

caliper housing in opposition to each other with said brake disk being interposed therebetween, said brake pad assemblies being movable toward and from said brake disk, a cylinder chamber formed in one of said caliper arms and filled with a hydraulic medium, a first piston member disposed slidably in said cylinder chamber adjacent to an associated one of said brake pad assemblies, a second piston member disposed slidably in said cylinder chamber with a space from said first piston member, means for sliding said second piston member toward said first piston member upon application of said brake



while simultaneously rotating said second piston member, thereby to produce a hydraulic pressure within said cylinder chamber under which said first piston member and said associated brake pad assembly are caused to more toward said brake disk; a reservoir for containing hydraulic medium; and means actuated by rotation of said second piston member for permitting flow of medium from said reservoir into said cylinder chamber when said second piston member is in its rest state, whereby compensation for wear of said brake pad assemblies is automatically achieved.

4,267,904

SPOT-TYPE DISC BRAKE

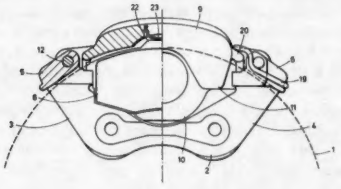
Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 19, 1979, Ser. No. 21,746

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1978, 2816559

Int. Cl.[3] **F16D** *65/02*

U.S. Cl. 188—73.3 **27 Claims**



1. A spot-type disc brake comprising:

a brake support member straddling a brake disc having a central opening in which a pair of brake shoes are disposed, each of said pair of brake shoes being disposed on a different side of said disc and being guided on guide surfaces present in said support member;

a brake caliper disposed in said central opening embracing said disc and said pair of brake shoes from the outside, said caliper carrying a brake-actuating device on one side of said disc in direct actuating relationship with one of said pair of brake shoes; and

a sliding guide arrangement to connect said caliper to said support member including

a first closed end bore in one of said caliper and said support member, a first retaining pin parallel to the axis of rotation of said disc fastened to the other of said caliper and said support member and slidably received in said first bore, said first retaining pin having a spherical sliding surface in engagement with an associated first portion of a cylindrical inner surface of said first bore to provide a first bearing surface to support said caliper at a first point, said first retaining pin enabling relative movement between said caliper and said support member in all operating states of said brake for continuous alignment of said caliper with said pair of brake shoes,

a resilient arrangement to clamp said caliper to said support member, and

two additional spaced bearing surfaces disposed on one of said support member and said pair of brake shoes to support said caliper at second and third points.

4,267,905

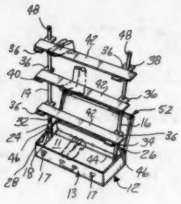
PORTABLE DISPLAY RACK AND SAMPLE CARRYING CASE

Oscar Stewart, 12073 N. Elms Rd., Clio, Mich. 48420

Filed Sep. 14, 1979, Ser. No. 75,690

Int. Cl.[3] **A47B** *61/06;* **A45C** *9/00;* **B65D** *5/52*

U.S. Cl. 190—13 R **6 Claims**



1. A portable display rack and sample carrying case including a storage compartment and a hinged cover comprising:

a carrying case comprising a base including a pair of opposed upstanding end walls;

a pair of spaced apart telescoping tubes storable within the case;

a pair of tube encircling clamps mounted to the end walls of the storage compartment to slidingly support the tubes;

a pair of braces extending between the tubes and the end walls;

a plurality of elongated planar shelf supports including a tube engaging aperture formed in one end to slidingly engages the tubes, the shelf supports being distributed along the extending tubes; and

a plurality of shelves extending between the shelf supports.

4,267,906

SLIDING CONTACT FOR A TOY TRAIN

Artur Fischer, Weinhalde 34, 7244 Waldachtal 3, Tumlingen, Fed. Rep. of Germany

Filed Jan. 25, 1980, Ser. No. 115,294

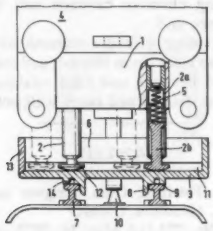
Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906309

Int. Cl.[3] **B60L** *5/38*

U.S. Cl. 191—49 **12 Claims**

1. A sliding contact for a toy train, for collecting current from a two-rail track system of a toy railroad, comprising a holding plate; two contact pins mountable on the toy train by said holding plate, each of said contact pins being arranged to be located above one rail of a track system and having an end portion facing toward the same; a sliding bridge engaged with said contact pins so as to allow lateral movement of the latter relative to the former, said sliding bridge being arranged to

slide along both rails of the track system and to maintain the electrical connection between the rails and said contact pins;



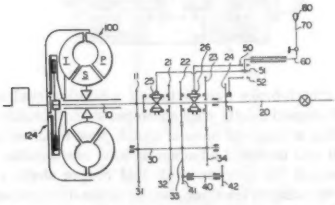
and means for guiding said sliding bridge during its sliding along the rails.

4,267,907

CLUTCH CONTROL APPARATUS OF AN AUTOMOTIVE POWER TRANSMISSION

Kazuyoshi Hiraiwa, Ome, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 728,966, Oct. 4, 1976, abandoned. This application Nov. 24, 1978, Ser. No. 963,344
Claims priority, application Japan, Oct. 6, 1975, 50-119691
Int. Cl.[3] B60K *41/22;* F16D *67/00*
U.S. Cl. 192—3.56 3 Claims



1. A power transmission system of an engine driven vehicle having a change-gear transmission with an input shaft and an output shaft; a plurality of drive gears of different numbers of teeth freely rotatably mounted on the output shaft and constantly driven from the input shaft; a plurality of synchronizing assemblies mounted on the output shaft for slideable movement thereon, each said synchronizing assembly being slidably engageable with a corresponding drive gear for synchronization between the gear and the output shaft; a driver-operable gear shift lever having a neutral position and a plurality of gear shift positions including at least a first shift position and a second shift position in which the synchronizing assemblies engage corresponding drive gears respectively; a link rod axially reciprocally movable with the gear shift lever for slide movement of the synchronizing assemblies by a predetermined stroke from the neutral position to the first shift position or to the second shift position; an electrically operable clutch to transmit torque of an engine to the transmission; and a clutch control circuit comprising

an electric actuator providing engagement of said clutch in response to opening of said clutch control circuit,

a first switch located in the gear shift lever to be closed while the driver is applying a force to move the gear shift lever toward the first shift position,

a second switch located on the gear shift lever to be closed while the driver is applying a force to move the shift lever toward the second shift position,

a third, usually closed switch operatively associated with the link rod and connected in parallel with the first and second switches to be opened both when the link rod moves by 60 to 80% of the predetermined stroke from the neutral position to the first shift position and when the link rod moves by 60 to 80% of the predetermined stroke from the neutral position to the second shift position,

a fourth, usually closed switch operatively associated with the link rod and connected in series with the first switch to be opened when the link rod moves by 60 to 80% of the predetermined stroke from the neutral position to the first shift position, and

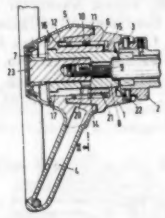
a fifth, usually closed switch operatively associated with the link rod and connected in series with the second switch to be opened when the link rod moves by 60 to 80% of the predetermined stroke from the neutral position to the second shift position.

4,267,908

UNILATERALLY ALTERNATING BACKLASH TORQUE LOCK

Horst Herold, Aschaffenburg, Fed. Rep. of Germany, assignor to Petri AG, Aschaffenburg, Fed. Rep. of Germany

Filed Mar. 23, 1979, Ser. No. 23,476
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1978, 2813095
Int. Cl.[3] F16D *67/02, 49/02*
U.S. Cl. 192—8 C 9 Claims



1. A unilaterally alternating backlash torque locking mechanism comprising a frame member, a control member having a longitudinally extending tubular portion, a longitudinally extending torque transmission member in rotational engagement about its axis with said control member, a sleeve member fixedly mounted on said frame member and extending radially adjacent said tubular portion of said control member and two loop springs embracing said control element in a loosely sliding arrangement against said sleeve member and extending at their inner and outer ends into recesses in said control member said inner ends abutting adjacent each other in one of said recesses.

4,267,909

UNILATERALLY ALTERNATING BACKLASH TORQUE LOCK

Horst Herold, Aschaffenburg, Fed. Rep. of Germany, assignor to Petri AG, Aschaffenburg, Fed. Rep. of Germany

Filed May 30, 1979, Ser. No. 43,669
Claims priority, application Fed. Rep. of Germany, Jun. 7, 1978, 2824947
Int. Cl.[3] F16D *67/00*
U.S. Cl. 192—8 C 8 Claims

1. A unilaterally alternating backlash torque locking mechanism comprising:

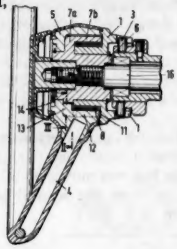
a housing member having a cam protruding inwardly;

a slotted cylindrical sleeve member having a slotted cylindrical portion and a slotted flange portion to receive said cam with a certain clearance;

a fixedly mounted inner hub member substantially surrounded by said sleeve member in spaced relationship to form an area between said inner hub and sleeve member;

a spring wound around said inner hub member in said area and turning radially inward at its end portions to abut

against said housing member, cam and sleeve member in the clearance space formed by the relationship of said cam in said slot,



wherein the cam is in a stepped configuration having a greater circumference in the area of said flange portion of said sleeve and extending at least partially into the area of said clearance space.

4,267,910

CLUTCH DRUM ASSEMBLY FOR AUTOMATIC POWER TRANSMISSION

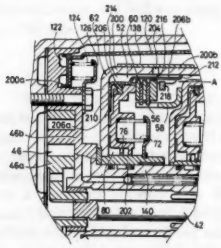
Takahiro Yamamori, Tokyo; Kazuyoshi Iwanaga, and Kunio Ohtsuka, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 30, 1978, Ser. No. 956,131

Claims priority, application Japan, Sep. 18, 1978, 53-114937

Int. Cl.³ F16D *67/02, 13/68, 13/72*

U.S. Cl. 192—17 R **5 Claims**



1. A power transmission having input and output shafts, a clutch drum assembly, a brake band wrapping the clutch drum assembly to brake the same when actuated, first clutch plates splined at their outer peripheral edges to the clutch drum assembly, and second clutch plates splined to a hub member rotatable with the input shaft, with the first and second clutch plates being alternately arranged, said clutch drum assembly comprising:

an outer drum member having an annular base portion and a cylindrical outer wall portion, said outer wall portion having an exterior surface contacted by said brake band, said outer drum member being coaxial with and rotatable about the axis of said input shaft;

an inner drum member having a cylindrical inner wall portion with an annular base portion at one end thereof which is fixed to and in sealing contact with the annular base portion of said outer drum member, said cylindrical inner wall portion being radially spaced from and being concentrically arranged within said cylindrical outer wall portion, said cylindrical inner wall portion being formed with a plurality of axially extending spline portions to which said first clutch plates are splined, the opposite end of said cylindrical inner wall portion being shaped to provide a radially outwardly extending integral lip in sealing contact with said cylindrical outer wall portion, the radial spacing between said cylindrical inner and outer wall portions in combination with the sealing contact between said annular base portions as well as between said lip and said cylindrical outer wall portion cooperating to define a fluid retaining chamber between said inner and outer drum members; and

means for providing a fluid communication between the interior of said inner drum member and said fluid retaining chamber, and between said fluid retaining chamber and the exterior surface of said outer wall portion.

4,267,911

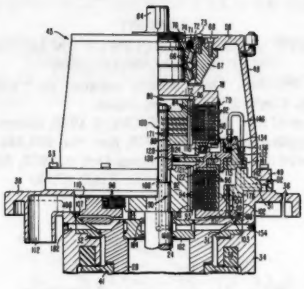
CLUTCH-BRAKE UNIT

Halsey W. Cory, Fairfield, Ohio, assignor to Force Control Industries, Inc., Hamilton, OhioIO

Division of Ser. No. 777,312, Mar. 14, 1977, abandoned. This application May 11, 1978, Ser. No. 904,764

Int. Cl.³ B60K *41/24;* **F16D** *13/74*

U.S. Cl. 192—18 A **4 Claims**



1. In a clutch-brake unit including a housing enclosing an input shaft aligned axially with an output shaft, a clutch assembly including at least one annular clutch plate mounted on said input shaft and disposed adjacent at least one annular clutch disc connected for rotation with said output shaft, a brake assembly including at least one annular brake disc connected to rotate with said output shaft and disposed adjacent at least one annular brake plate connected to said housing, and means for compressing said clutch plate and disc together to effect driving of said output shaft and for compressing said brake plate and disc together to effect braking of said output shaft, the improvement comprising means for directing separate flows of cooling and lubricating fluid within said housing between said clutch disc and plate and between said brake disc and plate, and partition means disposed between said clutch assembly and said brake assembly for substantially maintaining said separate flows of fluid through said clutch and brake assemblies, said means for compressing said clutch and brake discs and plates comprise a non-rotating annular piston and an annular cylinder supporting said piston for axial movement, and said partition means include a non-rotating annular baffle mounted on said piston for axial movement therewith.

4,267,912

SYNCHRONIZING RING

Walter Bauer, Eppelheim; Emilio Fabricius, Heidelberg; Günther Lanzerath, Wieblingen; Helmut Patzer, Nussloch, and Richard Vögele, Aultussheim, all of Fed. Rep. of Germany, assignors to Borg-Warner-Stieber GmbH, Heidelberg, Fed. Rep. of Germany

Filed Oct. 3, 1978, Ser. No. 948,286

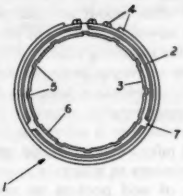
Claims priority, application Fed. Rep. of Germany, Oct. 6, 1977, 2744994

Int. Cl.³ F16D *23/06, 13/66*

U.S. Cl. 192—53 F **14 Claims**

1. A synchronizing ring adapted for gear synchronization in

gear couplings, comprising an annular body of a suitable material and having a conical clutching surface, and a friction lining formed of organic materials joined to the clutch surface of the



body by cementing, depressions formed in the annular body for the reception of said friction lining material, the friction lining having a coefficient of friction of more than 0.10.

4,267,913

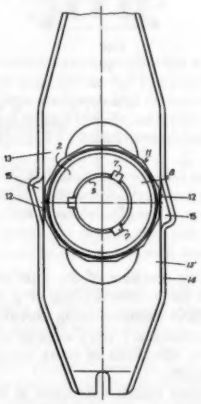
CLUTCH RELEASE DEVICE

Horst M. Ernst, Eltingshausen; Armin Olschewski, Schweinfurt; Rainer Schürger, Schwanfeld; Lothar Walter, Schweinfurt; Manfred Brandenstein, Aschfeld, and Erich Burkl, Stammheim, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 21, 1978, Ser. No. 879,745

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **15 Claims**



1. In a clutch release system wherein a clutch release bearing has rolling elements arranged between first and second bearing rings, the second bearing ring is shaped to be axially held with respect to the diaphragm spring of the clutch, and a clutch release lever is mounted to directly engage said first bearing ring, the improvement wherein said first bearing ring and said clutch release lever have cooperating first and second holding means respectively positioned to directly engage one another for holding said first bearing ring at a fixed angular displacement with respect to said clutch release lever, with respect to the axis of said bearing.

4,267,914

ANTI-KICKBACK POWER TOOL CONTROL

David A. Saar, Timonium, Md., assignor to Black & Decker Inc., Newark, Del.

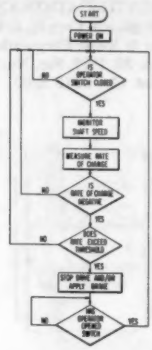
Filed Apr. 26, 1979, Ser. No. 33,661

Int. Cl.³ F16D *43/20, 43/24, 67/02*

U.S. Cl. 192—147 **46 Claims**

1. In a power tool of the type having an implement driven by a motive power source, the improvement of a system for detecting an impending kickback condition in the power tool comprising:

(a) monitoring means for monitoring the speed of a predetermined part of the power tool;



(b) means connected to said monitoring means for determining the rate of change of the monitored speed; and

(c) means for producing a predetermined response when said rate of change attains a determinable value.

4,267,915

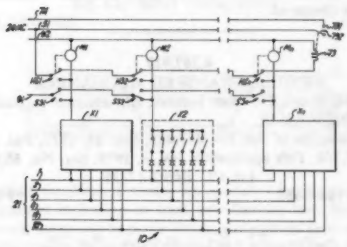
VENDING APPARATUS PRICE INTERFACE

Donald L. McLaughlin, Newtown Square, and Paul J. Beshenich, Norristown, both of Pa., assignors to Mars, Inc., Mc Lean, Va.

Filed Oct. 3, 1978, Ser. No. 948,170

Int. Cl.³ G07F *9/00*

U.S. Cl. 194—1 N **13 Claims**



1. A price interface for use with a multiprice vending machine or the like and a vending machine control circuit in a vending system which comprises

product selection means,

means for producing a price selection signal having a price value corresponding to a selected product which price value may change during the system's vending cycle,

means for comparison of a price value with the value of a vending system user's original credit,

means for vending the selected product, and

means for deducting a price value from the user's original credit,

the price interface comprising

a first register for capturing and storing a first price value which is the price value detected at the beginning of the vending cycle,

means for comparing the first price value with a current price value detected later during the vending cycle, and

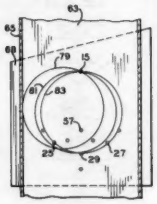
means for determining whether the first price value or the current price value is representative of the product actu-

ally vended and transmitting that price value to the means for deducting a price value from the user's original credit.

4,267,916
COIN IDENTIFICATION SYSTEM

Charles H. Black, Chicago, and Cary N. Eskow, Morton Grove, both of Ill., assignors to Keene Corporation, New York, N.Y.

Filed Jan. 30, 1979, Ser. No. 7,802
Int. Cl.³ G07F *3/02*
U.S. Cl. 194—102 **20 Claims**

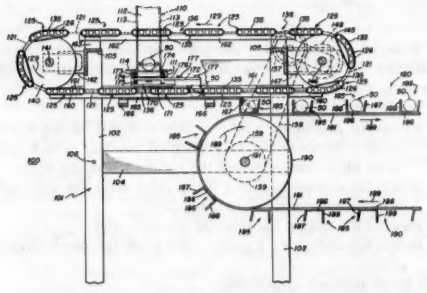


1. The method of determining the denomination-indicative size of each of a sequence of coins comprising the steps of:
moving the coins serially past an array of optical sensors;
determining the conjoint obscuration by a coin of a first sensor and at least one of a plurality of second sensors each at a common distance from the first sensor;
determining the conjoint obscuration by a coin of the first sensor and at least one third sensor at a second distance more remote from the first sensor than the second sensors;
for each such obscuration of the first sensor, identifying the coin denomination according to the maximum conjoint obscuration distance; and
monitoring another sensor intermediate the first sensor and the plurality of second sensors and disregarding a conjoint obscuration determination if the intermediate sensor is not also obscured.

4,267,917
ARTICLE TRANSFER MECHANISM

Walter H. Vogel, Hoffman Estates, Ill., assignor to Redington Inc., Bellwood, Ill.

Continuation of Ser. No. 833,435, Sep. 15, 1977, Pat. No. 4,176,741. This application Jun. 4, 1979, Ser. No. 45,198
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—457 **21 Claims**

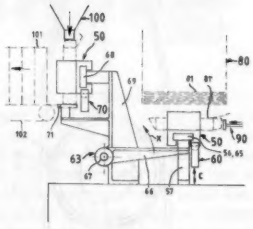


1. Article transfer apparatus for changing the direction of movement of articles while maintaining the orientation of the articles, the transfer apparatus comprising an infeed conveyor for conveying articles in a first direction while maintaining the articles in a predetermined orientation, a transfer conveyor comprising a wheel having a plurality of preformed containers thereon open only at the tops and bottoms thereof for receiving articles through the tops from said infeed conveyor in the predetermined orientation, guide mechanisms maintaining said containers oriented in the predetermined orientation during rotation of said wheel about an essentially vertical axis, an article conveyor having a plurality of pockets thereon open at the tops thereof for receiving articles through the tops thereof from said transfer conveyor in the predetermined orientation for conveying the articles in a direction different from that of said infeed conveyor, retainer structure closing the bottom of each of said containers as it arrives in position to receive an article from said infeed conveyor and opening the bottom of each of said containers as it arrives in position to deposit an article into one of said pockets on said article conveyor, whereby said article transfer apparatus transfers articles from said infeed conveyor moving in one direction with the articles in a predetermined orientation and deposits the articles in pockets on said article conveyor moving in another direction while maintaining the articles in the predetermined orientation.

4,267,918
PACKAGING MACHINE

Bernhard Steinbrecher, Südendstr. 54, 7500 Karlsruhe, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,479
Claims priority, application Fed. Rep. of Germany, May 29, 1978, 2823331
Int. Cl.³ B65G *37/00*
U.S. Cl. 198—472 **3 Claims**



1. In a packaging machine of the type including transport elements adapted to receive articles of a desired shape and nature, said transport elements being movable by endless conveyor means past stationary work stations adapted to act in at least two different directions of work upon the articles, the improvement wherein
(a) said conveying means comprises at least two separate conveying portions each including guiding means for guiding transport elements (**50**) along said conveying portions, the number of said separate conveying portions corresponding to the number of different working directions,
(1) said separate conveying portions being arranged in planes that intersect at an angle corresponding with the angle between the different working directions:
(2) said transport elements and said guide means including cooperating undercut guide slot (**53**) and rail means (**56, 68**) for retaining the elements in a given orientation in each conveying portion;
(b) wherein at the end of each conveying portion turning means (**63, 64**) are provided for transposing the transport elements from the preceding to the following conveying portion, each of said turning means including a rocking lever (**66**) pivotally connected at one end for pivotal displacement about an axis (**67**) parallel with said guide rail means, and a turning plate (**65**) connected with the free end of said rocking lever, said rocking lever being pivotable between first and second transfer positions in which said turning plate is aligned with the guide rail means of

said separate conveying portions, respectively, thereby to transport an element from one guide means to a position opposite one end of the other guide means; and

(c) further wherein each conveying portion includes drive means (60,70) for driving the transport elements in common along each conveying portion.

4,267,919

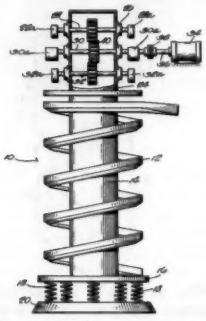
VIBRATING SPIRAL CONVEYOR DRIVE

Preston H. Schrader, Middletown, Ky., assignor to Rexnord Inc., Milwaukee, Wis.

Filed May 21, 1979, Ser. No. 41,167

Int. Cl.³ B65G *27/02*

U.S. Cl. 198—756 **4 Claims**



1. An improved circular conveyor having a base, a plurality of resilient members attached to the base, carrier means supported by said resilient members, and drive means for imparting vibrating motion to said carrier such that the articles carried thereon are imparted a circular motion, said improved comprising

(a) a plurality of co-planar shafts mounted in a vertical plane rotably associated with said carrier, and positioned transverse to the verticl axis of said circular conveyor with one of said shafts essentially intersecting said vertical axis,

(b) means for driving at least one of said shafts at a predetermined angular speed,

(c) coupling means for coupling said one shaft to the other of said shafts so that all shafts rotate at essentially the same predetermined angular speed, and

(d) a pair of eccentric weights mounted on each shaft, each weight of a pair mounted near an end of its respective shaft, said pairs being angularly displaced with each other such that the vertically directed components of the resultant forces caused by the rotating eccentric weights are in phase when the horizontal components are in phase.

4,267,920

CONVEYOR BELT ROLL

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt; Horst M. Ernst, Eltingshausen; Heinrich Kunkel, Schweinfurt; Leonard Halliger, Schweinfurt; Robert Stolz, Schweinfurt, and Rainer Schürger, Schwanfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

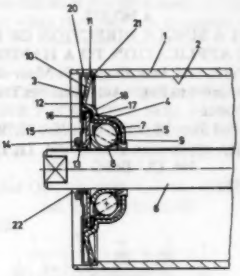
Filed Jun. 28, 1979, Ser. No. 52,796

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 7819856[U]

Int. Cl.³ B65G *39/09*

U.S. Cl. 198—842 **12 Claims**

1. A conveyor belt roll assembly comprising a roll casing, a roll end mounted in at least one end of the roll casing, a rolling bearing including a plurality of rolling elements and at least one bearing ring, a shaft, a ring member connected to the shaft and supporting the rolling elements between said bearing ring and roll end, said roll end and bearing ring being made of sheet metal, said roll end having a radially outwardly directed flange having corrugations extending continuously at its outer edge in a peripheral direction, said ring member axially securing the bearing on the shaft being arranged outside of the bearing, a radially outwardly directed disc mounted on the shaft and



forming a radial sealing slot with the outer axial face of the roll end and a cover plate extending radially inwardly to a point adjacent said ring member for axially securing the bearing on the shaft arranged on the roll end and forming with said disc a radial sealing slot and seal means mounted in the sealing slot between the opposing faces of said cover plate and disc and in the sealing slot between said roll end and said disc.

4,267,921

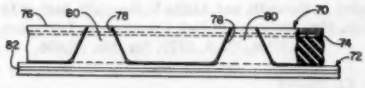
ANTI-BACKBEND BELTS

Ralph W. Kell, Lincoln, Nebr., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 944,485, Sep. 21, 1978. This application Jan. 28, 1980, Ser. No. 115,829

Int. Cl.³ B65G *15/34, 23/14*

U.S. Cl. 198—847 **5 Claims**



1. Endless flexible belt means for operation between a plurality of pulleys including at least one flexible belt having an elastomeric body and opposite inside and outside face surfaces, the inside surface of any belt of said belt means being directed toward the pulley axes when the belt means are in use, said one belt including a plurality of longitudinally extending high tensile modulus cords embedded in said one belt nearer the inside surface and a layer of substantially incompressible material facing outwardly and forming the outside surface, said incompressible material facing outwardly of said inside face surface, said incompressible material comprising at least 50% of the total outside surface-to-inside surface thickness of said one belt to provide an anti-backbend characteristic to the belt means when it is in its straightened position between said pulleys, said endless flexible belt means further including a conveyor belt including drive lugs on its inside surface and longitudinally extending tensile cords, said conveyor belt operable between a conveyor drive pulley and a take-up pulley, said one belt providing for support of said conveyor in an area between said conveyor drive pulley and take-up pulley, said one belt having a plurality of notches located along at least one lateral edge thereof and extending completely through from the inside surface to the outside surface thereof in a position capable of alignment with the conveyor belt drive lugs so as to be in engagement therewith, said one belt operable between at

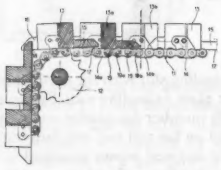
least two pulleys mounted on the inside pathway of said conveyor belt in proximate position between said conveyor drive and take-up pulleys so as to become engaged with said drive lugs on the inside surface of said conveyor belt and to run in drive synchronism therewith, the combination of interlocked notches and the separation of the tensile cords of said one belt and said conveyor belt providing an anti-backbend characteristic that supports a load on the surface of said conveyor belt.

4,267,922

CHAIN WITH A SINGLE DIRECTION OF CURVATURE AND APPLICATION TO A HANDRAIL

Pierre Patin, Paris, and Jean Plagne, St-Maur-des-Fossés, both of France, assignors to Regie Autonome des Transports Parisiens, Paris, France

Filed Jun. 28, 1979, Ser. No. 52,792
Claims priority, application France, Jul. 11, 1978, 78 20595
Int. Cl.³ B65G *17/06*
U.S. Cl. 198—851 **6 Claims**



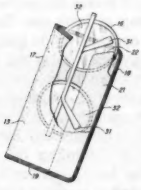
1. A chain with a single direction of curvature comprising a classic chain of single links and second links in regular succession and a block fixed to each of said second links having a plane face tangent to the axes of said second links extending on either side of said second links in the longitudinal direction of the chain over a length at least equal to the total length of said single links adjacent said second links, adjacent ones of said blocks overlapping along the chain.

4,267,923

EYEGLASS CASE

Charles A. Baratelli, and Aletha V. Baratelli, both of Ft. Lauderdale, Fla., assignors to Itek Corporation, Lexington, Mass.

Filed Jul. 9, 1979, Ser. No. 55,666
Int. Cl.³ A45C *11/04*
U.S. Cl. 206—5 **9 Claims**



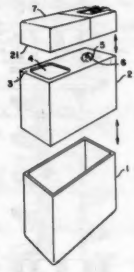
1. In an eyeglass case for holding a pair of eyeglasses, said eyeglass case having a pair of elongated opposed wall portions defining a pocket therebetween for the receipt of said eyeglasses, said opposed wall portions being joined together along at least one of their respective edges to define a first longitudinal edge of said case, said wall portions further defining first and second opposite ends of said case, said first end including means defining an opening through which a pair of eyeglasses are inserted into and removed from said pocket, the improvement comprising separator means positioned within said pocket for maintaining the temple portions of said pair of eyeglasses separated from the lens portions thereof when said pair of eyeglasses are positioned within said pocket, said separator means comprising an elongated member extending partially into said pocket from said first longitudinal edge of said case and positioned generally centrally between said opposed wall portions, whereby upon insertion of a pair of eyeglasses into said pocket through said opening, the temple portions thereof will be positioned on the opposite side of said member from said lens portions thereof.

4,267,924

CIGARETTE CONTAINER AND LIGHTER COMBINATION

Peter Tata, 404 E. LaSalle Ave., Royal Oak, Mich. 48073

Filed Jul. 30, 1979, Ser. No. 62,044
Int. Cl.³ A24F *15/00, 15/10, 15/18*
U.S. Cl. 206—87 **10 Claims**



1. A cigarette container and lighter combination adapted to receive cigarettes therein comprising:

a container having a bottom closure and an opening opposite said bottom closure;

a cover slidably mounted to said container, said cover having a top closure and an opening opposite said top closure, said top closure having an opening of predetermined size near three edges of said top closure;

means for dispensing said cigarettes so that the travel of said dispensing means is limited from a first predetermined closed position to a second predetermined open position;

means for mounting said dispensing means to said top closure so that at least one cigarette is dispensed through said hole in said top closure when said dispensing means is in a second predetermined position; and

means mounted to said dispensing means for lighting said cigarettes.

4,267,925

CLOSURE FOR LARGE-VOLUME VIAL

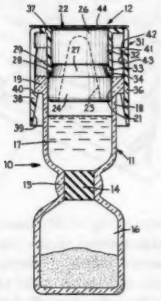
Gary K. Crankshaw, Kalamazoo, Mich., and Roger A. Erber, Mount Prospect, Ill., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 1, 1979, Ser. No. 80,740
Int. Cl.³ B65D *25/08*
U.S. Cl. 206—221 **10 Claims**

1. In combination, a two-compartment mixing vial having a constriction between the two compartments, a removable plug disposed within the constriction to provide a liquid-tight barrier between the two compartments, said vial having a neck at one end thereof for defining an opening communicating with one of said compartments, said neck having an annular radially outwardly projecting rim adjacent the free end thereof, and a closure structure attached to said neck for closing the opening therein, said closure structure including a substantially cylindrical and resiliently flexible stopper means including a first portion having an outside diameter which is normally slightly larger than the inside diameter of, and sealingly received within, said neck, said stopper means including a second portion of reduced diameter projecting beyond the free end of said

neck, said closure structure also including cap means having a top wall and a cylindrical skirt fixed to said top wall and projecting therefrom in surrounding relationship to said stopper, said skirt having radially inwardly projecting flange means adjacent the free end thereof, said skirt being telescoped over said annular rim with said flange means located below said rim to mechanically lock said cap means upon said vial, the improvement comprising:

means defining a surrounding annular groove in said stopper means intermediate said first and second portions thereof, said annular groove being disposed adjacent to and outwardly of said rim, said groove having spaced side walls;



said cap means including an inner sleeve affixed to said top wall, concentric with said outer skirt and spaced inwardly therefrom, said inner sleeve surrounding said second stopper portion and having an outside diameter no greater than the inside diameter of the vial neck opening so that said inner sleeve can be moved axially into said neck along with the second stopper portion upon the urging of said closure structure toward said vial, said inner sleeve having radially inwardly projecting locking means extending into said annular groove for axially mechanically interlocking said cap to said stopper whereby axial movement of said cap means causes corresponding axial movement of said stopper means.

4,267,926

BOX FOR SMOKING ARTICLES IN THE FORM OF CIGARETTES OR THE LIKE

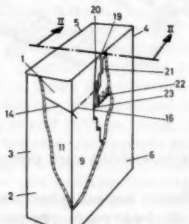
Ramon Toimil, Bole, Switzerland, assignor to Fabriques de Tabac Reunies S.A., Neuchatel, Switzerland

Filed Jul. 19, 1979, Ser. No. 59,097

Claims priority, application Luxembourg, Jul. 27, 1978, 80049

Int. Cl.[3] B65D *85/10;* **A24F** *15/00;* **B65D** *5/38, 5/66*

U.S. Cl. 206—268 **8 Claims**



1. Box for smoking articles in the form of cigarettes or the like, comprising a four-walled outer box, open on top and on the bottom, made from a first blank of stiff cardboard, and into which an inner box is inserted, the inner box being made from a second blank of stiff cardboard, having opposed side walls and a back wall whose upper part provides a folding lid (top) formed by means of inclusions on both side walls and a fold on the back wall joining these, and a tongue punched from the back wall of the inner box, said tongue being attached to the outer box by its free lower end so that it moves the folding lid backward when the inner box is lifted upward, said box being further characterized in that the free end of the tongue **(19)** is glued to the outer box **(2)** and the tongue **(19)** has a flexible area **(22)** which, when the inner box **(1)** is inserted forms a loop **(23)** which is opened when the inner box is pushed upward.

4,267,927

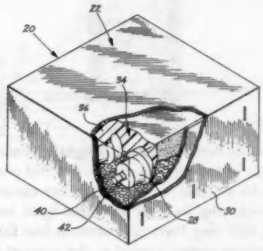
ARTICLE OF MANUFACTURE COMPRISING PROTECTIVE PACKAGING FOR PACKAGEABLE OBJECTS OF A FRAGILE OR PERISHABLE NATURE

Edgar English, Jr., 45125 Redwood Ave., Lancaster, Calif. 93534

Filed Oct. 22, 1979, Ser. No. 87,316

Int. Cl.[3] B65D *85/42*

U.S. Cl. 206—524 **11 Claims**



1. An article of manufacture taking the form of protective packaging means for packageable objects of a fragile or perishable nature, comprising: hollow protective container means comprising at least two container portions and means for relatively positioning same in a manner defining a hollow interior chamber for protectively receiving and packaging objects of a fragile or perishable nature, at least one of said container portions being effectively provided with shaped inner liner means having one or more shaped recess means formed in place therein in the presence of such previously received packageable objects and at least partially engaging in at least partially coextensive contact with parts of such previously received packageable objects, said shaped inner liner means comprising a multi-phase material taking the form of a protective compressible partial pad means of foamed-in-place compressible, expanded-cell foam plastic material and interspersed therebetween with effective bubble-pack means having a large number of closely adjacent, but completely isolated and non-communicating gas cells, said effective bubble-pack means comprises plastic sheeting forming said large number of closely adjacent, but completely isolated and non-communicating gas cells wherein enclosed gas comprises air, and wherein said gas cells effectively comprises air cells.

4,267,928

COMPOSITE CONTAINER STRUCTURE

Byron V. Curry, Jr., Box 5040, Montecito, Calif. 93108

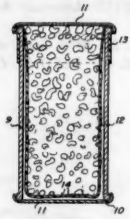
Continuation-in-part of Ser. No. 928,283, Jul. 26, 1978, abandoned. This application Jan. 16, 1979, Ser. No. 3,903

Int. Cl.[3] B65D *73/00*

U.S. Cl. 206—583 **2 Claims**

1. A composite container having an outer support and an inner liner surrounding the space within the container and top and bottom rigid gas impervious cover means adapted to be seamed onto the container for cooperating with said liner to seal the contents placed in the storage space within the struc-

ture, comprising a fibrous tubular member having a generally circular cross-section defined by exterior and interior walls and forming an open ended outer support member, a tubular shrinkable plastic barrier film inner liner fitted within the support member with a portion thereof extending beyond at least one of the ends of said tubular member, said liner being flexible and impervious to gas flow, said liner being sealed at one end and having said other open end extending from within the support member and beyond an open end of the support member to define the mouth of the tubular liner, a portion of the mouth of said liner that extends beyond the support member being folded over and around to overlap the exterior wall of the support member at said one end of said at least one of the ends of said support, the overlapped portion of the liner being



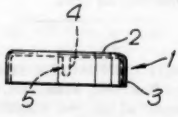
heat shrunk to be wrinkle-free and tightly conforming to the exterior surface of the support member at said one end thereof, said heat shrunk overlapped portion of the mouth of the liner forming a plastic ring integral with that open end of the support member, said ring forming a smooth seat for cooperating with the top cover means seamed to the support member over said ring to seal the mouth of the liner, the bottom cover means being crimped to the other end of the support member, said plastic liner being supported within the fibrous member having a product stored within the liner which together with the cover means seamed to the support member over the ring forms a gastight impervious container enclosing the storage space for the product to protect such product when there is a difference in pressure between the storage space within the container and the pressure on the outside thereof.

4,267,929

LID ARRANGEMENT FOR A SKI WAX CAN WITH A TEAR-OFF CASING

Lars Korterod, Stokke; Arne Strand, Oslo; Odd Ellingsen, and Harry Broen, both of Sem, all of Norway, assignors to Tubefabrikken A/S, Sem, Norway

Filed Oct. 24, 1979, Ser. No. 87,795
Claims priority, application Norway, Nov. 3, 1978, 783703
Int. Cl.[3] B65D *3/26, 5/54, 75/70;* B43K *19/02*
U.S. Cl. 206—603 **10 Claims**



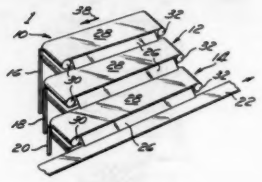
1. A lid arrangement for a ski wax can with a tear-off casing, said lid comprising a bottom surrounded by a peripheral skirt adapted to lie against the exterior of the casing, characterized in that a sharp edge or knife edge is arranged on the interior of the lid at its skirt and facing away from the bottom of the lid, said edge or knife edge producing a cut in the upper edge of the can casing when the lid is placed on the can.

4,267,930

RAISIN SEPARATING DEVICE

Douglas H. Melkonian; Mark S. Melkonian, both of 6058 E. Butler, Fresno, Calif. 93727; Dennis J. Melkonian, 8336 E. North Ave., Sanger, Calif. 93657, and Suren M. Melkonian, 6058 E. Butler, Fresno, Calif. 93727, assignors to Douglas H. Melkonian; Mark S. Melkonian, both of Fresno; Dennis J. Melkonian, Sanger and Suren Melkonian, Fresno, all of, Calif.

Filed Feb. 28, 1979, Ser. No. 15,936
Int. Cl.[3] B07C *5/02*
U.S. Cl. 209—3.1 **14 Claims**



1. A method for separating moldy raisins from a mixed batch of moldy raisins and unspoiled raisins, comprising the steps of:

immersing said mixed batch of raisins in hot water for a sufficient amount of time to make the moldy raisins substantially softer than the unspoiled raisins;

loading said mixed batch of raisins in a bulk mass onto a resilient moving conveyor, inclined transversely to its direction of movement;

striking said conveyor with a predetermined frequency to cause the firmer raisins to bounce progressively off the side of said conveyor in a series of bounces while the softer raisins move more in the direction of movement of the conveyor; and

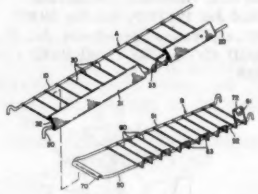
removing said softer raisins from said surface.

4,267,931

ADJUSTABLE SHELVING RACK

Anthony S. Belotta, Bloomfield, N.J., assignor to Warner-Lambert Co., Morris Plains, N.J.

Filed Jul. 5, 1979, Ser. No. 54,736
Int. Cl.[3] A47F *5/00, 5/14*
U.S. Cl. 211—153 **8 Claims**



1. An adjustable shelving rack comprising two elements wherein

A. the first element comprises two sections interconnected by a series of planar rungs, one section above the plane formed by said rungs and the other section below the plane formed by said rungs;

B. the second element comprises two sections supporting a series of planar rungs with both sections on the same side of the plane formed by said rungs;

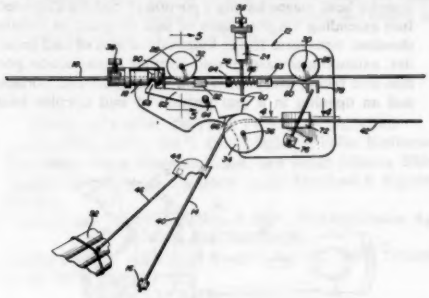
such that when both elements are coupled together the rungs of both elements all lie in the same plane.

4,267,932

SKYLINE LOGGING CARRIAGE

Rodney W. Vessey, 1006 South Hall, Grangeville, Id. 83530, and Colin C. Rhoades, Box 34, White Bird, Id. 83554

Continuation-in-part of Ser. No. 928,079, Jul. 26, 1978. This application Nov. 21, 1978, Ser. No. 962,681
Int. Cl.[3] B66C *21/00*
U.S. Cl. 212—92 5 Claims



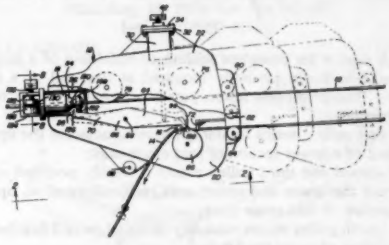
1. In combination with an inclined skyline, a carriage guidingly supported from said skyline for movement therealong, a stop carried by said skyline establishing a lower limit of downward movement of said carriage along said skyline, said carriage including guide means, a dragline guidingly supported from said guide means for longitudinal shifting relative to said carriage and including one end portion depending downwardly from said carriage and a second end portion extending upwardly along said skyline, an abutment means carried by said one end portion of said dragline for abuttingly engaging with said carriage for limiting upward movement of said dragline relative to said carriage, latch means shiftably supported from said carriage for movement between first and second applied and release positions and spring biased toward its applied position, said latch means being latchingly engageable with said stop to latch said carriage against upward movement of said carriage when said latch means is in said first position and said carriage is in its lower limit position on said skyline defined by said stop, brake means on said carriage including an operator shiftable between applied and released positions and spring biased to its applied position, said brake means being operative to brake the second end portion of said dragline against longitudinal shifting relative to said carriage when said operator is in its applied position, said abutment means, upon upward movement of said one end portion of said dragline relative to said carriage into a predetermined raised position including means operative to shift said latch means from its applied position to its release position, said stop and operator including means operative to positively shift said operator toward its released position upon final movement of said carriage downwardly along said skyline toward said lower limit, said carriage including opposite side portions between which said dragline is guidingly received, an abutment surface carried by one side portion, generally paralleling said second end portion of said dragline, facing the other side portion of said carriage and closely opposing the side of said dragline adjacent said one side portion of said carriage, pivot means defining a pivot axis extending between said opposite side portions, said brake means including a wedge member supported from said other side portion of said carriage opposing said abutment surface and defining a ramp surface inclined downwardly along said dragline second end portion toward said one side portion of said carriage, said brake means also including a lever pivotally supported at one end portion from said carriage by said pivot means for oscillation about said axis with the latter extending transversely of said lever and with the remaining portion of said lever disposed between said abutment and ramp surfaces, said lever being supported from said pivot means for lateral shifting along said axis, said operator being operably associated with the remaining portion of said lever for swinging said remaining portion downwardly along said dragline responsive to shifting of said operator to said applied position and for swinging said remaining portion of said lever upwardly along said dragline responsive to shifting of said operator to said released position, said lever, when being swung downwardly along said dragline being engageable with said ramp surface to effect camming of said lever along said axis toward said abutment surface and into engagement with said dragline for clampingly engaging the dragline between said remaining portion of said lever abutment surface.

4,267,933

LOGGING CARRIAGE

Rodney W. Vessey, 1016 W. 13th Ave., Meridian, Id. 83642, and Colin C. Rhoades, Box 34, White Bird, Id. 83554

Filed Jul. 26, 1978, Ser. No. 928,079
Int. Cl.[3] B66C *21/00*
U.S. Cl. 212—108 5 Claims

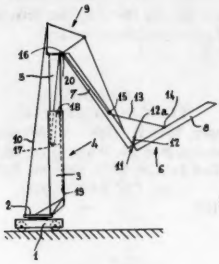


1. In combination with an inclined skyline, a carriage guidingly supported from said skyline for movement therealong, a stop carried by said skyline for limiting downward movement of said carriage along said skyline, said carriage including guide means, a dragline guidingly supported from said guide means for longitudinal shifting relative to said carriage and including one end portion extending upwardly along said skyline and a lower end portion depending downwardly from said skyline, an abutment carried by said dragline abuttingly engageable with said carriage for limiting upward movement of said dragline relative to said carriage, latch means shiftably supported from said carriage for movement between a release position and a latch position relative to said carriage, means yieldingly biasing said latch means toward said latch position, said stop including a latch surface engageable by said latch means, upon downward approach of said carriage along said skyline to a first latching position closely adjacent the lower limit position of movement of said carriage on said skyline defined by said stop, to latch said carriage against upward movement along said skyline, said abutment including a latch surface engageable by said latch means, upon upward approach of said dragline relative to said carriage toward a second latching position closely adjacent the upper limit position of movement of said dragline relative to said carriage, to prevent downward movement of said dragline relative to said carriage, said stop including a cam surface, on the side of said stop latch surface remote from the upper end of said skyline, engageable by said latch means to cam said latch means from said latch position toward said release position upon downward movement of said carriage along said skyline past said first latching position, and said abutment including a cam surface on the side of said abutment latch surface remote from said one upper end portion of said dragline operative to cam said latch means toward said release position upon upward movement of said dragline relative to said carriage past said second latching position.

4,267,934
TELESCOPICALLY EXTENDIBLE MAST CRANE

Henri Vernay, La Clayette, France, assignor to S.A. A C M A G, Semur en Brionnais, France

Filed Jul. 20, 1978, Ser. No. 926,567
Claims priority, application France, Jul. 22, 1977, 77 23362
Int. Cl.[3] B66C *23/42*
U.S. Cl. 212—184 4 Claims



1. A device for complete folding or unfolding of a hinged two section boom pivotally mounted at one end of a first section thereof atop a telescopically extendible crane mast comprising:

(a) first pulley means rotatably mounted adjacent the upper end of a lower section of said crane mast;

(b) second and third pulley means rotatably mounted adjacent the lower and upper ends respectively of an upper section of said crane mast;

(c) fourth pulley means rotatably mounted on said first boom section adjacent the hinge;

(d) a substantially inextensible cable of selected length secured at one end thereof to said crane mast and reeved over said first, second, third and fourth pulley means, said cable being secured at the other end thereof adjacent the free end of the second section of said boom, so that upon relative movement of said upper and lower sections of said crane mast, said second section of said boom pivots relative to said first section thereof;

(e) said first and third pulley means in all positions of said boom having a distance therebetween equal to the distance between said fourth pulley means and said other end of said cable; and

(f) wherein said mast and said first and second boom sections are in substantially coplanar parallel relationship when said mast sections are in a fully retracted position.

4,267,935
RAILWAY CAR ROTARY COUPLER

Walter C. Dilg, Elma, N.Y., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 4, 1979, Ser. No. 72,707
Int. Cl.[3] B61G *1/38*
U.S. Cl. 213—72 15 Claims

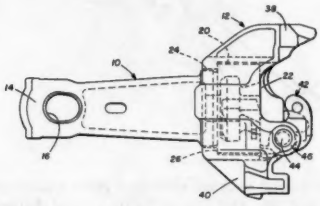
10. A railroad car coupler comprising:

(a) a shank having a butt end portion for mounting with a coupler yoke and a head end portion on the opposite end portion thereof;

(b) a coupler head means having a guard arm side portion, a knuckle side portion and a knuckle for cooperative interconnection with another mating coupler having similar elements;

(c) means on said shank at said shank head end portion thereof to rotatably mount said coupler head means including, a substantially cylindrical exterior surface portion therearound, an annular shoulder extending inward of said substantially cylindrical surface and transverse to the longitudinal axis of said shank at the end of said substantially cylindrical surface facing said butt end portion wherein said cylindrical surface and said annular shoulder form coupling and mounting surfaces for permitting rotation of said coupler head means relative to said shank and for supporting said coupler head on said shank for draft action of said railcar coupler;

(d) means within said coupler head means to mount with said means at said shank head end portion to rotatably mount said coupler head means including, an opening within said coupler head means having a portion of circular cross-section extending longitudinally of said coupler, an annular shoulder transverse to the longitudinal axis of said shoulder, extending inward of said circular cross-section portion and facing away from said shank butt end portion, and an opening in a rear portion of said coupler head



means through which said shank head end portion extends into said coupler head means;

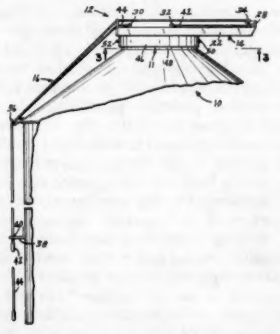
(e) said knuckle is mounted with said coupler head means knuckle side portion and has a nose portion extending from said railway car coupler for cooperative interconnection with another railway car coupler, and a tail portion extending into the interior of said coupler head means; and

(f) said means on said shank head end portion to rotatably mount said coupler head means has an opening within said shank head end portion to receive and rotatably mount said knuckle tail portion for rotating motion of said coupler head means including said knuckle tail portion relative to said shank and for mounting said knuckle for draft action of said knuckle.

4,267,936
REMOTELY OPERABLE LID FOR STORAGE BINS

Cleone J. Pavlicek, Morris, Minn., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 13, 1979, Ser. No. 93,442
Int. Cl.[3] B65D *43/26*
U.S. Cl. 220—262 22 Claims



1. A storage bin having a remotely operable lid comprising:

(a) an enclosure for storing materials, said enclosure having an opening for admitting the materials into the enclosure,

said opening having a ridge extending outwardly from said enclosure and around the periphery of said opening;

(b) a remotely operable lid apparatus including a cover plate, a pair of guides for carrying edges of said plate and allowing said plate to slide laterally within said guides;

(c) means for remotely operating said lid;

(d) means for attaching said lid apparatus to said enclosure including a band-shaped member to encompass said ridge, said band being fastened to said apparatus, and means for attaching said band to said ridge.

4,267,937

TEAR OPENING DEVICE FOR CONTAINERS

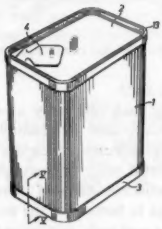
Lars-Eric Piltz, Dalby; Bo T. Quist, Bjärred; Folke Kiellarson, Barsebäck; Siwer Mansson, Lund, and Bengt Nilsson, Södra Sandby, all of Sweden, assignors to AB Akerlund & Rausing, Sweden

Division of Ser. No. 721,866, Sep. 9, 1976. This application Apr. 2, 1979, Ser. No. 25,792

Claims priority, application Sweden, Sep. 12, 1975, 7510169; Sep. 12, 1975, 7510170

Int. Cl.³ B65D *17/30, 17/32*

U.S. Cl. 220—267 **8 Claims**



1. In an opening device for a package, said package comprising a substantially rigid outer wall portion and an inner layer of substantially gas-tight material, the improvement wherein said outer wall portion includes a first tearing notch defining a removable portion and a second tearing notch defining a grip tongue, said outer wall portion and said inner layer being interconnected substantially over their total surfaces facing each other with said outer wall portion and said inner layer being separated within an area under at least a portion of said grip tongue, said outer wall portion including an injection molded cap and said inner layer including polypropylene laminated with a thin aluminum foil attached to said cap, said cap being attached to a middle part of said package, said middle part being in the form of an extruded casing which on the outside thereof includes a sealing outer layer, and said inner layer substantially extending to said sealing outer layer.

4,267,938

RESEALABLE PRESSURE RELEASE CLOSURES

Michael Debenham, Frankston; Allan G. Dalli, Warrandyte, and Peter L. Revill, Middle Park, all of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Filed Oct. 3, 1979, Ser. No. 81,361

Claims priority, application Australia, Oct. 10, 1978, PD6325

Int. Cl.³ B65D *17/32*

U.S. Cl. 220—268 **14 Claims**

1. In a push-in easy opening closure comprising an aperture in a container member and a push-in pressure releasing resealable closure overlapping with and underlying said container member to close said aperture, the improvement comprising connection means integrally connecting said closure to said container member for rendering flexure of said closure, during opening of said closure, more uniform and less concentrated, at

least in the region of said closure adjacent said connection means, to improve the resealing properties of said closure.

4,267,939

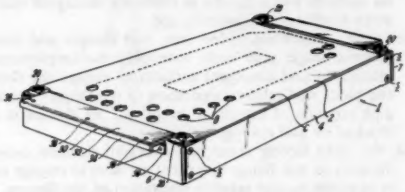
MEDICAL DEVICE STERILIZATION CASE

Thomas R. Perrett, Bala Cynwyd, Pa., and Gilbert T. Carter, Oaklandon, Ind., assignors to Synthes AG, Chur, Switzerland

Filed Aug. 10, 1979, Ser. No. 65,530

Int. Cl.³ B65D *45/00*

U.S. Cl. 220—318 **3 Claims**



1. A case comprising

a top wall member being provided with a pair of attached, parallely opposed, depending side walls,

a bottom wall member being provided with a pair of attached, parallely opposed, upstanding front and rear walls,

at least four upstanding post members with a post member disposed at each side edge of the front and rear walls and attached to the front and rear walls, each post comprising a neck extending above the upper edge of the front and rear walls and a head surmounting said neck whose minimum transverse dimension is greater than the maximum transverse dimension of said neck, and

a handle member pivotally attached to each side wall with its axis of pivoting rotation and its longitudinal central axis disposed in parallel relation to the longitudinal central axis of its associated side wall and with a portion of it pivotally disposable between an adjacent post affixed to the front wall and an adjacent post affixed to the rear wall,

said top wall being provided with

a pair of recesses extending rearwardly from the front edge of said top wall, each recess being open to the front edge of said top wall and being provided with a concave extension at its rear edge configured to underly said head and restrain upward movement of said top wall and

a pair of apertures disposed adjacent the rear edge of said top wall, each aperture being generally rectangular in top plan view and being provided with a concave extension at its rear edge configured to underly said head and restrain upward movement of said top wall,

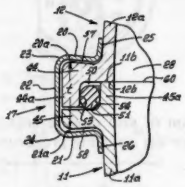
the longitudinal dimension of said handle being approximately equal to the distance between an adjacent post affixed to the front wall and an adjacent post affixed to the rear wall so that said handle, when disposed between an adjacent post affixed to the front wall and an adjacent post affixed to the rear wall, prevents rearward sliding movement of said top wall and its associated side walls.

4,267,940

REMOVABLE CLAMP STRUCTURE FOR TANK SECTIONS WHICH AT TIMES BLOCK SAID REMOVAL

Charles E. Wade, Covina, Calif., assignor to Purex Corporation, Lakewood, Calif.

Filed Jun. 26, 1979, Ser. No. 52,100
Int. Cl.[3] B65D 45/32, 45/34
U.S. Cl. 220—321 13 Claims



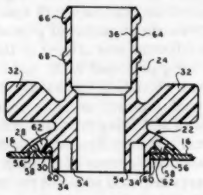
1. In a tank closure system, the combination comprising
(a) complementary sections of a tank adapted to contain pressurized fluid, said sections having annular flanges which are subject to relative separation as the tank sections relatively separate due to said fluid pressurization,
(b) said flanges respectively having oppositely facing annular surfaces which extend in relatively divergent relation away from the tank interior, and
(c) clamp means assembled onto said flanges and having channel shape with webs extending in complementary relation to said divergent surfaces to engage the flanges and block said relative separation of the flanges at which time removal of the clamp means off the flanges is also blocked by said divergent surfaces,
(d) the webs having relatively divergent surfaces complementary to said flange divergent surfaces to engage same in response to said relative separation of the flanges, the webs being vertically spaced apart, the upper web divergent surface extending radially outwardly and upwardly relative to a horizontal plane, and the lower web divergent surface extending radially outwardly and downwardly relative to said horizontal plane,
(e) there being terminal flanges respectively integral with the webs to stiffen the webs, said terminal flanges extending generally vertically proximate said tank sections.

4,267,941

BREATHER CAP

Philip B. Loudin, Palos Hills, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 26, 1979, Ser. No. 106,596
Int. Cl.[3] B65D 6/12, 6/40, 25/00, 90/12
U.S. Cl. 220—85 SP 6 Claims



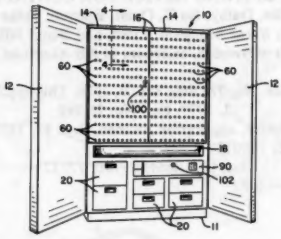
1. A unitary plastic cap for covering an aperture in a member having a raised annular ridge disposed radially outwardly of said aperture and including relatively inner and outer walls joining said member, said cap comprising: (a) retaining means for extending through said aperture and compressively engaging said cap against said member, and (b) an endless outer sealing element having a diametral extent greater than said annular ridge for sealingly engaging against said outer wall, and (c) an endless inner sealing element having a diametral extent less than said annular ridge for sealingly engaging against said member.

4,267,942

PHARMACEUTICAL DISPENSING CABINET

John B. Wick, Jr., Box 578 R.D. 2, Parkesburg, Pa. 19365, and Eric C. Norlin, 90 Hilltop Rd., Coatesville, Pa. 19320, assignors to John B. Wick, Jr. and Eric C. Norlin, both of Chester, Pa.

Filed Jun. 20, 1979, Ser. No. 50,930
Int. Cl.[3] A47B 67/02
U.S. Cl. 221—2 11 Claims



1. A cabinet for storage and controlled issuing of preselected stock comprising:
a main supporting shell;
a stock supporting rack internally of said shell, said rack including vertically and horizontally aligned rows of stock supporting cubicles which are contoured and designed to support a stock of packaged stock items with barrier means adjacent one side thereof restricting ejection of said items to bottom of the stock item only;
an inner closure for said rack, said inner closure including an operating panel affording limited access to items of stock supported in said rack for controlling dispensing theereof;
means for selective locking and unlocking of said inner closure;
an outer locked closure for said cabinet shell;
means for unlocking and opening of said outer closure for access to said operating panel, said means including an electrical key reader and readable operator assigned keys; and
recording means for documenting opening of said outer closure and dispensing of said stock, said recording means identifying key used with date and time of use.

4,267,943

METHOD AND APPARATUS FOR HANDLING AND DISPENSING HYGROSCOPIC PELLETS

John J. Karikas, Shelby, Ohio, assignor to General Electric Company, Schenectady, N.Y.

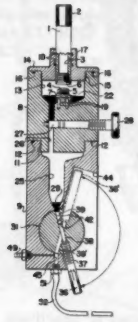
Filed May 18, 1979, Ser. No. 40,233
Int. Cl.[3] B65B 31/02; B67C 3/10; G01F 11/24
U.S. Cl. 222—1 9 Claims

6. A mechanism for receiving and dispensing hygroscopic lamp fill material which has been formed into pellets of substantially uniform size comprising:
a housing defining a reservoir comprising a loading chamber having an inlet opening, a dispensing chamber having an outlet opening, and a passage interconnecting said chambers together with a valve for opening or closing the passage,
said inlet opening being adapted to accommodate and be sealed by the insertion of a vial thereinto, said vial being adapted to contain a charge of said pellets and having a stoppered end adapted to enter said loading chamber,

means for flushing dry non-reactive gas through said reservoir,

means for unstoppering said vial without unsealing said inlet opening,

and a transfer device comprising metering means defining a



volume accommodating a given number of pellets and means to oscillate said metering means in a closed path between said outlet opening and a delivery channel in order to transfer said given number of pellets from the dispensing chamber to the delivery channel at every oscillation.

4,267,944

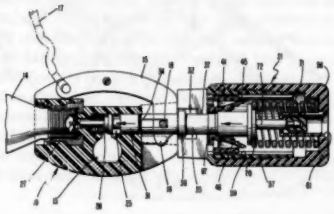
AUTOMATIC INFLATOR

Glenn H. Mackal, Buena Vista Dr., Ringwood, N.J. 07456

Filed Aug. 7, 1978, Ser. No. 931,432

Int. Cl.[3] B63C 9/24

U.S. Cl. 222—5 **13 Claims**



1. In an inflator for a gas-inflatable article, said inflator having a gas capsule-holding means, a capsule-piercing pin, means including a plunger for advancing the piercing pin and capsule relatively toward each other to pierce the capsule, resilient means urging the plunger and capsule relatively toward each other, and a latching mechanism cooperating with the plunger for holding the plunger in cocked position against the thrust of the resilient means, the improvement which comprises a housing for the plunger and the latching mechanism, the housing having a body with an elongated sleeve and a transverse base portion at an axially inner end thereof, a cap with a transverse cover portion at its axially outer end and an elongated skirt extending axially inwardly from the cover portion, the sleeve and skirt being telescoped and having a threaded connection therebetween, the plunger extending longitudinally within the sleeve and skirt and having a free end terminating adjacent the base portion of the housing, the latching mechanism comprising an annular water-responsive latching unit removably received in a seat within the sleeve in the base portion of the housing, the latching unit receiving the free end of the plunger therewithin and substantially encircling said free end of the plunger, and the resilient means being interposed between a portion of the cap adjacent its axially outer end and a part of the plunger.

4,267,945

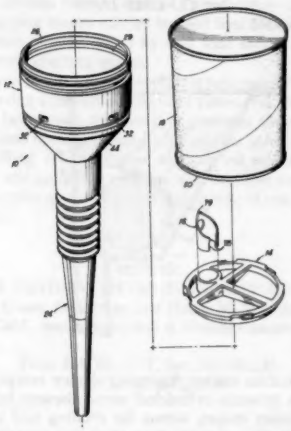
LIQUID FUNNEL AND CONTAINER PIERCING BLADE COMBINATION

Walter P. Maynard, Jr., 3070 Presidential Dr., Suite 236, Atlanta, Ga. 30340

Filed Aug. 6, 1979, Ser. No. 63,857

Int. Cl.[3] B67B 7/28

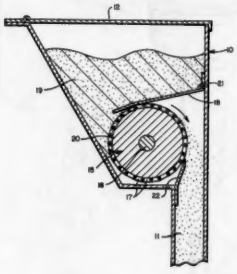
U.S. Cl. 222—83.5 **5 Claims**



1. A piercing and pouring device for a cylindrical side wall container having dispensing material therein and having a cover, comprising: a hollow body portion having an open top, a bottom and an interior wall surface and being dimensioned to telescopically receive therein said container; a pouring spout depending from said bottom and terminating in a pouring opening, said spout being in flow communication with said body portion; a container piercing blade carrying element which is circular in shape; means for releasably securing said blade carrying element within said body portion; and a piercing blade on said blade carrying element and having a piercing point upwardly extending from said carrying element toward said open top, said securing means including a protrusion on said interior wall surface, said protrusion having a flat bottom surface, said blade carrying element having an opening on its other periphery, said opening dimensioned to have said protrusion pass therethrough, and said blade carrying element having a groove on its outer periphery in communication with said opening, said blade carrying element being inserted within the interior of said hollow body portion with said opening in registry with said protrusion, said blade carrying element being lowered beneath said protrusion and rotated so as to have said flat bottom surface engage said groove and wherein said securing means includes said blade carrying element having a plurality of said openings and respective grooves and said interior wall surface carrying a plurality of said protrusions, each dimensioned to cooperate with a respective one of said openings, the bottom surfaces of said protrusions being co-planar, wherein one of said openings and one of said protrusions are dimensioned so as to cooperate only with each other so as to secure said blade carrying element in a selected position within said body portion and wherein a horizontal ledge projects outwardly from said interior wall surface so as to engage the bottom of said blade carrying element when it is in said selected position, said body portion further including a pair of spaced upper and lower indented rings circumferentially extending about its exterior surface for adding structural stability to said body portion, each of said indented rings having an

interior annular surface which projects inwardly from said interior wall surface, said interior annular surface of said lower ring being disposed between said bottom surfaces of said protrusions and said horizontal ledge whereby said interior annular surface of said lower indented ring engages the underside of said blade carrying element when said blade carrying element is in said selected position.

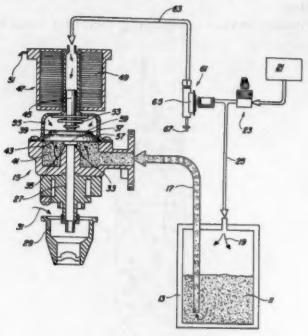
4,267,946
PARTICULATE MATTER DISPENSING DEVICE
Gary G. Thatcher, Van Wert County, Ohio
Filed Oct. 1, 1979, Ser. No. 80,825
Int. Cl.³ G01F *11/10*
U.S. Cl. 222—345 **4 Claims**



1. A particulate matter dispensing device comprising container means, rotatable cylindrical means disposed horizontally in said container means, means for rotating said cylindrical means, a plurality of particulate receiving container means covering substantially the entire surface of said cylindrical means, a single length of sprocket chain, helically wound about said cylindrical means in abutting relationship wherein said sprocket chain is fastened at each of its ends to longitudinally opposite ends of said cylindrical means and covers substantially all of the surface of said cylindrical means, said sprocket chain comprising a single chain comprising two spaced substantially parallel sides, said sides being connected at spaced intervals by connecting pin means, so as to create said plurality of particulate receiving means, and restrainer means positioned coextensive with said cylindrical means and extending throughout the length of said cylindrical means.

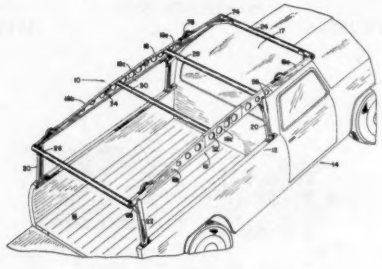
4,267,947
BEVERAGE DISPENSER VALVE ARRANGEMENT
Henry Wasserstrom, Chicago, Ill., assignor to Alco Foodservice Equipment Company, Miami, Fla.
Filed Jul. 2, 1979, Ser. No. 53,857
Int. Cl.³ B65D *83/14*
U.S. Cl. 222—399 **6 Claims**

1. A valve arrangement for a pressurized non-homogeneous flavoring additive in a beverage dispenser comprising:
- a valve seat;
- a valve member to engage said valve seat to prevent discharge of the non-homogeneous flavoring additive;
- bias means urging said valve member into engagement with said valve seat;
- actuating means to selectively provide a positive force to separate said valve member from said valve seat for a predetermined time to permit discharge of a predetermined amount of the non-homogeneous flavoring additive;
- first pressure means responsive to the pressure of the non-homogeneous flavoring additive to assist said actuating means in separating said valve member from said valve seat against the force of said bias means;
- second pressure means not utilizing the non-homogeneous flavoring additive to assist said bias means in moving said valve member to engagement with said valve seat against the force of said first pressure means; and



- pressure release means to deactivate said second pressure means upon energization of said actuating means.

4,267,948
CARGO CARRIER
David W. Lewis, 169 Otto Cir., Sacramento, Calif. 95822
Filed Jun. 11, 1979, Ser. No. 47,232
Int. Cl.³ B60P *3/40*; B62D *33/00*
U.S. Cl. 224—42.34 **6 Claims**



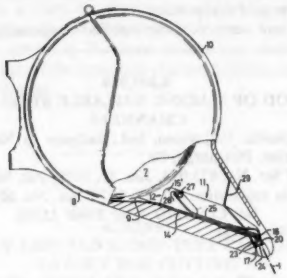
1. A cargo carrier for a vehicle comprising:
- a pair of channel member side rails to extend fore and aft of the truck with the flanges thereof facing inward;
- said side rails being formed in forward and rear sections and including:
- a central extender section having fore and aft extension thereon receivable in said forward and rear side rail sections;
- a splice member receivable by said forward and rear side rail sections when same are placed end to end;
- screw means for securing a selected one of said extender section and said splice member to said front and rear channel sections;
- pairs of front and rear legs supporting said side rails;
- mounting brackets carried on the tops of said legs;
- hooks on said mounting brackets engaging over the lower flanges of said channel members;
- a bolt hole through each of said brackets;
- a series of spaced bolt holes through the lower flanges of said channel member side rails in the areas thereof to overlie the general locations of said front legs; and
- bolts extending through the mounting brackets of said front legs and a selected, aligned pair of said spaced bolt holes.

4,267,949

DEVICE FOR SEPARATING TAPE PORTIONS FROM A TAPE OF FLEXIBLE MATERIAL

Sven A. Hemgren, Kungsängen, Sweden, assignor to Esselte Pendaflex Corp., Garden City, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,311
Claims priority, application Sweden, Oct. 4, 1978, 7810397
Int. Cl.[3] B26F *3/02*
U.S. Cl. 225—106 11 Claims



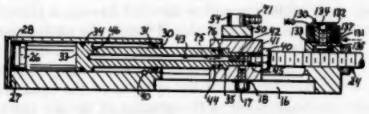
1. A device for separating tape portions of mutually equal length from a tape of flexible material, for instance a tape of queue tickets, characterized in that the device comprises a guide channel having a first plane bottom portion, which at one end thereof over a steplike ledge, extending transversely over the whole width of said guide channel, passes over into a second bottom portion provided with an obliquely cut away portion at one side of said guide channel, whereby said tape, which is provided with a plurality of slots, spaced at mutually alike distances from each other and extending obliquely to the longitudinal direction of the tape over the main part of the width thereof, so that short unslotted edge portions are left at each tape edge, is pullable along said guide channel in engagement with said first bottom portion, the edge of said ledge and the second bottom portion and is pressed into abutment with said second bottom portion immediately adjacent said ledge by means of an elongated, resilient member, the trailing, unslotted edge portions of the tape thereby passing in over said cut away portion of the second bottom portion, so that the leading tape portion is separated from the tape, when the intermediate slot passes in over said cut away portion.

4,267,950

STOCK FEEDER FOR PUNCH PRESSER AND THE LIKE

Albert W. Scribner, Six Country Club Rd., Darien, Conn. 06820

Continuation of Ser. No. 679,490, May 10, 1976, Pat. No. 4,076,161. This application Feb. 16, 1978, Ser. No. 878,383
The portion of the term of this patent subsequent to Feb. 28, 1995, has been disclaimed.
Int. Cl.[3] B65H *17/36, 17/44*
U.S. Cl. 226—146 1 Claim



1. A pneumatically operated feeder for intermittently advancing stock into the work station of a punch press or the like: comprising

a one-piece U-shaped generally rectangular frame that includes a main block portion, an end block portion and an intermediate plate-like portion that integrally interconnects the lower regions of said main block portion and said end block portion:

said main block portion being formed at its side with an air supply inlet aperture;

laterally adjustable stock guide means carried by said frame at said end block;

a feed slide mounted for reciprocating movement on said plate-like frame portion, the lower side of said feed slide being provided with generally flat surfaces that slidably engage corresponding generally flat surfaces on the upper side of said plate-like frame portion;

retaining means for retaining said feed slide on said plate-like frame portion for longitudinal reciprocatory movement;

stock gripping means carried by said feed slide;

fluid motor means carried by said feed slide for actuating said stock gripping means;

a main fluid motor means disposed in said main block portion and having a movable piston and piston rod, the outer end of the later being connected to said feed slide; and

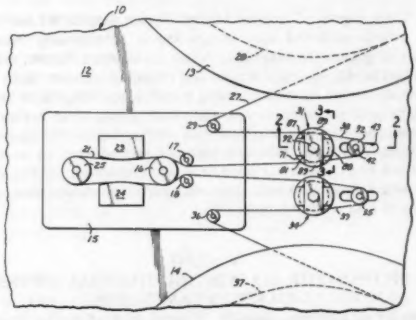
valve means communicating with said air inlet aperture for controlling the operation of both of said fluid motor means and including a valve and a movable control member therefor mounted at one lateral side of said main block portion.

4,267,951

TAPE GUIDING METHOD AND APPARATUS

Frederic F. Grant, Bellflower, and Henry M. Martija, La Verne, both of Calif., assignors to Bell & Howell Company, Chicago, Ill.

Filed Jul. 16, 1979, Ser. No. 58,225
Int. Cl.[3] B65H *23/08*
U.S. Cl. 226—195 32 Claims



23. Apparatus for guiding a tape having a major tape surface extending between parallel tape edges, comprising in combination:

first tape guide means extending across said major tape surface for supporting said advancing tape and including a first tape supporting surface;

second tape guide means extending across said major tape surface for supporting said advancing tape and including a second tape supporting surface;

means for stressing said advancing tape with said first tape guide means including said first tape supporting surface uniformly across said tape and at both of said edges, including means connected to said first tape guide means for mounting said first tape supporting surface;

means connected to said second tape guide means for mounting said second tape guide means in spaced relationship to said first tape guide means;

means for advancing said tape in a loop-shaped tape path relative to said first and second tape guide means, with said loop-shaped tape path having a first leg portion touching said first tape supporting surface on one side of

said first tape guide means, a second leg portion touching said first tape supporting surface on another side of said first tape guide means, and a bight portion interconnecting said first and second leg portions and extending about said second tape guide means in contact with said second tape supporting surface;

means for positioning the tape in said first leg portion at one of said tape edges, including a first reference surface extending at an acute angle to said first supporting surface;

means for positioning the tape in said second leg portion at said one tape edge, including a second reference surface extending at an acute angle to said first supporting surface; and

means coupled to said second tape guide means for imposing on said tape a yaw motion loading the tape at said one edge against said first and second reference surfaces.

4,267,952

FOUR BAR LINKAGE FASTENER LOADER

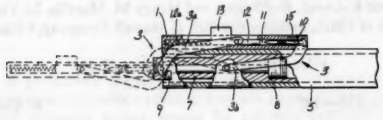
Stuart D. Kershner, Bethany, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Oct. 29, 1979, Ser. No. 89,644

Claims priority, application United Kingdom, Nov. 4, 1978, 43231/78

Int. Cl.³ B25C *1/18, 1/14*

U.S. Cl. 227—9 **4 Claims**



1. An improved fastener loading device adapted for use with a powder-actuated tool comprising a substantially tubular retaining member adapted to receive a fastener therein, means for retaining a fastener within said retaining member, push rod means carried by said retaining member and adapted to overcome said retaining means and controllably eject a fastener from said retaining member, and connecting means hingedly connected to said retaining member and adapted to be connected to a powder-actuated tool, said connecting means comprising at least two legs, disposed in spaced relation along the axis of said retaining member.

4,267,953

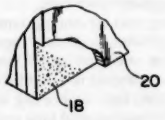
METHOD FOR ALLEVIATING THERMAL STRESS DAMAGE IN LAMINATES

Charles A. Hoffman; John W. Weeton, both of Rocky Rivery, and Norman W. Orth, Cleveland, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 893,857, Apr. 6, 1979, Pat. No. 4,211,354. This application Feb. 20, 1980, Ser. No. 122,967

Int. Cl.³ B23K *20/02*

U.S. Cl. 228—118 **3 Claims**



1. A method for making metallic composites comprising at least two alternating layers of metals and metal alloys having different coefficients of thermal expansion and defining an interface therebetween, said method comprising

providing a plurality of tungsten reinforcement layers,

providing a plurality of nickel-chromium alloy matrix layers,

positively introducing non-intersecting discrete discontinuities into the alloy matrix layers at said interface in said composite by placing inert particles between said reinforcement layers and said matrix layers at said interface so as to reduce thermal stress produced by the unequal thermal expansion of said alternating layers,

assembling said reinforcement layers and said matrix layers into alternating layers,

hot pressing said assembled reinforcement and matrix layers to form said composites, and

cooling said composites to ambient temperature.

4,267,954

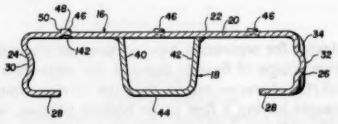
METHOD OF MAKING NAILABLE STEEL FLOOR CHANNELS

James T. Smith, Valparaiso, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 873,074, Jan. 27, 1978, Pat. No. 4,194,330. This application Jul. 26, 1979, Ser. No. 60,770

Int. Cl.³ B21D *5/08*; E04F *15/06*

U.S. Cl. 228—173 D **4 Claims**



1. A method of forming nailable steel planking members having an anti-skid load-bearing surface thereon comprising

passing a running length of flat strip steel stock successively through a first plurality of sets of forming rolls, a set of die rolls, and a second plurality of sets of forming rolls to progressively form the initially flat steel strip into a structural channel member having a flat central web defining the load-bearing surface of the planking members with a plurality of die-formed anti-skid projections integrally formed on and projecting outwardly from the load-bearing surface and opposed first and second downwardly depending flanges formed one on each side edge of the central web with the flanges each terminating at their lower edge in substantially coplanar, inturned ledges, the first flange being formed with a longitudinally extending outwardly convex corrugation which is substantially complementary to the concave corrugation in the first flange,

the first plurality of forming rolls each having substantially smooth continuous central surface portions for engaging and maintaining the straight flat condition of the central section of the steel strip forming the central web of the channel and contoured side edge portions for roll forming the side edge of the steel strip into substantially the final configuration of the first and second flanges but with the first and second flanges being inclined outwardly from their final position in the structural channel,

the set of die rolls including at least one pair of opposed die rolls each including a first die roll having a plurality of spaced substantially cylindrical female die cavities formed in its outer periphery and a second die roll having a plurality of substantially spherical raised pressure elements on its outer periphery with the spacing of the pressure elements corresponding to the spacing of the die cavities in the first die roll, the first and second die rolls being rotated in synchronization with the die cavities and pressure elements engaging the central web portion of the channel being formed in opposition to one another with the pressure elements applying sufficient pressure to the steel strip to cause a cold flow of metal from the steel strip into the opposed die cavities to thereby form a plurality of longitudinally extending rows of anti-skid projections on the

central web portion of the channel, the anti-skid projections each being substantially cylindrical and having a height no greater than about one-half the thickness of the strip steel being formed,

the second plurality of forming roll sets each having one roll engaging the surface of the strip on which the anti-skid projections are formed and having a plurality of annular grooves in its surface in position to receive the anti-skid projections,

the second plurality of forming rolls acting on the continuous strip to form the first and second flanges into their final position in the channel, and

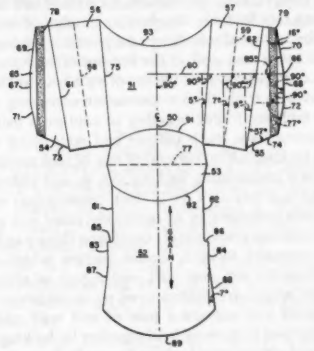
welding a generally U-shaped reinforcing channel to the central web of the structural channel between the first and second flanges.

4,267,955

QUICKLY ERECTED SCOOP-TYPE CARTON AND LAYOUT FOR CUTTING

Glenn E. Struble, Oxford, Ohio, assignor to Diamond International Corporation, New York, N.Y.

Filed Jul. 25, 1979, Ser. No. 60,516
Int. Cl.³ B65D 5/36, 5/08
U.S. Cl. 229—16 R **8 Claims**



1. A blank for forming a carton comprising

a bottom panel,

a pair of sidewall panels each connected to said bottom panel on opposite sides of said bottom panel,

end wall panels attached on opposite sides of one of said sidewall panels,

glue flaps attached to each of said end wall panels along opposite edges of said end wall panels from the edges of said end wall panels attached to said sidewall panels,

a portion of the outer edge of each of said glue flaps aligned parallel to a center line extending longitudinally through said bottom and sidewall panels,

a second portion of the outer edge of each of said glue flaps extending inward at an acute angle from said parallel edge portion,

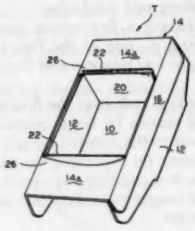
the other one of said pair of sidewall panels having an edge portion on each side parallel to the center line extending longitudinally through said bottom and sidewall panels, and outwardly extending edge portions on each side of said sidewall panel extending at an obtuse angle from each of said parallel sidewall edge portions which obtuse angle is complementary to said acute angle of each of said second portions of the outer edges of said glue flaps.

4,267,956

LIQUID TIGHT TRAY

Richard F. House, St. Charles; Karl A. Kohler, Roselle, both of Ill., and Philip W. Lewis, Greensboro, N.C., assignors to Container Corporation of America, Chicago, Ill.

Filed Jan. 25, 1980, Ser. No. 115,607
Int. Cl.³ B65D 5/36
U.S. Cl. 229—30 **8 Claims**



1. A paperboard and film tray for holding liquid and readily erectable with one hand from a collapsed tubular blank, comprising:

(a) a bottom wall;

(b) a pair of opposed side walls foldably joined at their lower edges to and upstanding from opposed side edges of said bottom wall;

(c) a top wall foldably joined at opposed side edges to and extending laterally between upper edges of respective side walls;

(d) said top wall including a pair of co-planar end sections spaced from each other a distance not substantially less than the length of said bottom wall to form an opening therebetween for access to said tray;

(e) a pair of opposed end walls foldably joined at their lower edges to and extending upwardly from opposed end edges of said bottom wall;

(f) said end walls each having at least one upper portion engageable with an edge of an opening in said top wall to provide interlocking engagement between said end wall and said top wall;

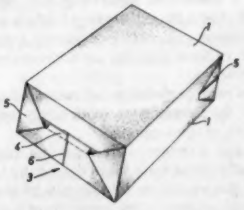
(g) a relatively thin, flexible sheet of liquid impermeable material having marginal areas secured to certain of said side and end walls.

4,267,957

PACKING CONTAINER AND A LAMINATE FOR ITS MANUFACTURE

Sven N. H. Holmström, Löberöd, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Nov. 15, 1979, Ser. No. 94,496
Claims priority, application Sweden, Nov. 21, 1978, 7811982
Int. Cl.³ B65D 5/08
U.S. Cl. 229—37 R **15 Claims**



1. A packing container, comprising:

a first end wall having first, second and third consecutive edges with a first corner defined by the first and second edges and a second corner defined by the second and third edges;

a first wall joined to the first end wall along said first edge;

a second wall both joined to the first wall and connected to the second edge of the first end wall between said first and second corners by a corner lug;

a third wall both joined to the second wall and joined to the first end wall along said third edge;

said corner lug having a first crease line which extends between a central portion of the first end wall and an imaginary straight line between said first and second corners; and

a sealing fin extending both over the first end wall and the corner lug, said sealing fin being connected both to the first end wall and to the corner lug, said first crease line crossing the sealing fin between a central portion of the sealing fin of the first end wall and a portion of the sealing fin crossing said imaginary straight line between said first and second corners.

4,267,958

HINGE-LID CIGARETTE PACK

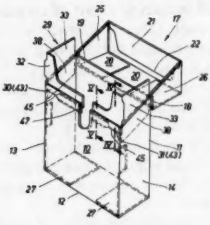
Heinz Focke, and Kurt Liedtke, both of Verden, Fed. Rep. of Germany, assignors to Focke & Co., Verden, Fed. Rep. of Germany

Filed Jul. 6, 1979, Ser. No. 55,206

Claims priority, application Fed. Rep. of Germany, Jul. 31, 1978, 2833494

Int. Cl.[3] **B65D** *5/66, 85/10*

U.S. Cl. 229—44 CB **9 Claims**



1. A hinge-lid cigarette pack folded from a unitary blank and including a lid hinged to a rear wall of the pack, the lid surrounding and engaging in its closed position an upstanding collar inwardly set back from a front and opposite side walls of the pack, characterized by:

(a) the collar being directly connected to the blank only by a pair of narrow residual connecting bridges (**30, 31**) disposed at opposite ends of a front wall (**32**) of the collar and extending to corresponding opposite ends of the upper edge of the front wall (**10**) of the pack,

(b) an elongated intermediate reinforcing strip (**44**) disposed in the open blank between the upper edge of the front wall of the pack and a lower edge of the collar front wall and defined by a transverse separating cut (**40**) extending between and above the connecting bridges and a pair of angled perforation cuts (**42**) individually extending from opposite ends of the separating cut to transverse fold lines (**45**) on the bridges,

(c) the height of each perforation cut measured transverse to the length of the intermediate reinforcing strip being less than the width of the strip, and

(d) the collar and intermediate reinforcing strip being Z-folded inwardly about the upper edge of the front wall of the pack and the transverse fold lines, with the strip lying against the inner surface of the upper front wall portion of the pack and engaging the lower edge of the collar front wall.

4,267,959

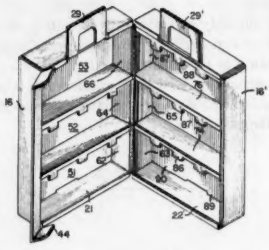
HINGED PAPERBOARD CONTAINER

Earl F. Gilbert, Farmington Hills, Mich., assignor to Westvaco Corporation, New York, N.Y.

Filed Oct. 22, 1979, Ser. No. 87,013

Int. Cl.[3] **B65D** *5/46, 25/22, 5/22*

U.S. Cl. 229—52 B **4 Claims**



1. A container with integral handles formed from a single blank of corrugated paperboard or the like comprising a pair of connected trays which are foldable to meet one another and provide a single package enclosing a volume equal to the combined volume of each tray, the improvement wherein each tray comprises a reinforced construction including a bottom wall with foldably attached side walls, a plurality of end wall reinforcing flaps foldably attached to the ends of said side walls and a locking flap foldably attached to an edge of one of said side walls for frictionally locking said paired trays together, a multiple thickness end wall at the bottom of each tray and a handle containing end wall at the top of each tray, each bottom end wall having a triple thick construction consisting of a pair of panels which are folded together to capture a pair of end wall reinforcing flaps, each bottom end wall being held together by a locking tab on the end of one of said panels which is inserted in a cooperating locking slot in said bottom wall, each top end wall having a triple thick construction except in the handle area consisting of an outermost panel and an innermost panel, said outermost panel comprising three parts including a first centrally located handle portion which extends upwardly from the top end wall, and a pair of abbreviated locking flaps which are folded over to lie adjacent to said innermost panel and capture a pair of end wall reinforcing flaps, each top end wall being held together by locking tabs on the ends of said abbreviated locking flaps which are inserted in cooperating locking slots in said bottom wall.

4,267,960

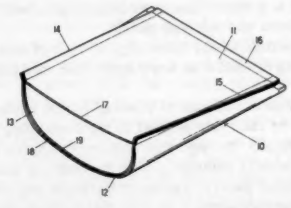
BAG FOR VACUUM PACKAGING OF MEATS OR SIMILAR PRODUCTS

Keith D. Lind, and Deane E. Galloway, both of Appleton, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Aug. 29, 1979, Ser. No. 70,734

Int. Cl.[3] **B65D** *33/02, 81/14, 85/00;* **B65B** *25/00*

U.S. Cl. 229—55 **10 Claims**



1. An open ended bag adapted for the packaging of meat having bone protrusions, comprising:

(a) two outer rectangular panels each having front, back and side edges with the corresponding side edges of each panel being equal in length, the front and back edges of one of the panels being substantially longer than the corresponding front and back edges of the other panel so that the one panel is substantially wider than the other panel, each of said outer panels being formed of an inner layer of a thermoplastic heat sealable material and an outer layer of plastic material which is not affected by temperatures required to seal the heat sealable material;

(b) an inner boneguard panel, to resist puncture by the bone protrusions, with surfaces of heat sealable thermoplastic material and having front, back and side edges which are substantially equal in length to those corresponding front, back and side edges of said larger outer panel, said inner panel being secured at its side edges and along one of its back edges between and to said two outer panels by heat seals formed along said corresponding side edges of the two outer panels and by a heat seal formed along the entire length of the back edge of the smaller outer panel so that all three panels are secured and sealed together along their corresponding side edges and back edges, and with the portions of the back edges of the larger outer panel and the inner panel extending outwardly from the back edge of said smaller outer panel being folded over and heat sealed together, so that an open ended bag is formed to allow insertion of a meat product therein, with the boneguard panel being fixed in place co-extensive with the wider outer panel so that the bag has an inner panel of additional protective material extending over more than 50% of the inner surface of the bag, and all facing surfaces of said three panels at the open front end of the bag being heat sealable so that the bag may be closed by pressing the front edges of the bag panels together under heat and pressure after the product has been inserted.

4,267,961

PHOTOCROSSLINKABLE, HIGH-TEMPERATURE-RESISTANT POLYMERS AND THEIR USE IN COLOR IMAGING DEVICES

Thomas W. Martin, Rochester; Mohammad A. Sandhu, Pittsford, and Dennis J. Savage, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 940,057, Sep. 6, 1978, Pat. No. 4,190,446.
This application Sep. 14, 1979, Ser. No. 75,621
Int. Cl.³ G03F 5/00; G03C 1/76; H01L 31/04; G02B 1/04
U.S. Cl. 250—226 **10 Claims**

1. In a color filter array comprising a layer of a transparent polymer containing a planar array of filter elements, wherein each of said filter elements contains a heat-transferable dye, the improvement wherein said polymer is a photocrosslinkable organic solvent-soluble condensation polymer having at least two recurring units and a Tg greater than 200° C., wherein said polymer contains sufficient ethylenically unsaturated radiation-sensitive crosslinkable units to render said polymer insoluble in organic solvents on exposure to radiation to which said crosslinkable units are sensitive.

4,267,962

SECURITY SYSTEM

Ronald A. Domkowski, Arlington Heights, Ill., assignor to Honor-Gard System, Chicago, Ill.

Filed Jun. 29, 1979, Ser. No. 53,427
Int. Cl.³ G07F 9/06
U.S. Cl. 232—15 **12 Claims**

1. A security system for mounting a coin-collecting container in a plurality of operating positions on a coin-processing machine, said system comprising:

a mounting member removably attached to said container including a coin-receiving aperture for directing coins into said container;

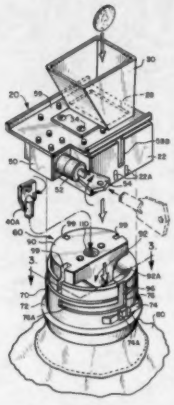
rotatable closure means movable on said member between an opened position allowing coins to pass through said aperture and a closed position blocking the passage of coins through said aperture;

first actuating means on said member for selectively driving said closure means between said opened and closed positions;

abutment means arranged in a plurality of selected positions on said member;

a housing adapted for connection to said coin-processing machine and further adapted to releasably connect said mounting member and the associated container to said machine, said housing including means for receiving coins processed by said machine and directing the coins into said container;

a plurality of locking stations defined by said housing and arranged in selected positions about the housing, each



station being alignable with at least one of said abutment means with said member connected to said housing;

second actuating means on said housing and engagable with said first actuating means to drive said closure means into said opened position as said member is rotated with respect to said housing to align one of said abutment means with one of said locking stations; and

integral locking means adapted to be positioned at one of said locking stations and including a locking detent movable between a locked and an unlocked position, said locking means and detent being arranged to permit relative rotation of said member and said housing in said unlocked position and further arranged to engage said locking detent with said abutment means on said member, to thereby prevent the relative rotation of said member and said housing, with said detent in said locked position.

4,267,963

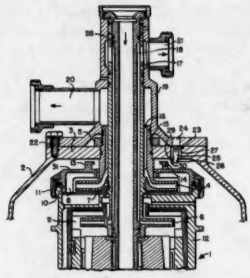
SAFETY DEVICE FOR CENTRIFUGAL SEPARATOR

Hugo Zurbrüggen, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator Aktiengesellschaft, Oelde Westfalen, Fed. Rep. of Germany

Filed Oct. 30, 1979, Ser. No. 89,701
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1978, 2847106
Int. Cl.³ B04B 7/06, 11/08
U.S. Cl. 233—1 B **8 Claims**

1. In a centrifugal separator comprising a rotatable drum for the separation, a stationary hood surrounding the drum with clearance, at least one paring disk secured by releasable fastening means to the hood and disposed in the drum with clearance with respect to the drum and for withdrawal of material separated in the drum, each paring disk having a shaft for conveying the separated material away from the paring disk, and an offtake for receiving separated material from the shaft, sur-

rounding the shaft and fastened to the hood top, said releasable fastening means being inaccessible when the offtake is in place on the hood, the improvement which comprises a safety device for locking the offtake in place on the hood when the drum is rotating, comprising first permanent magnet means mounted on the drum extending only part way around the drum axis, second permanent magnet means mounted on said offtake for



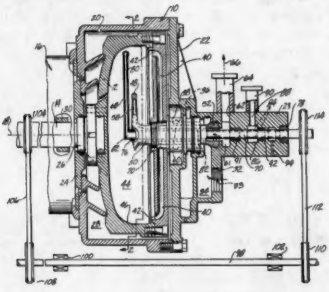
actuation in response to interaction of the first and second magnet means when the drum is rotating, and effective when actuated to lock the offtake on the hood, the portion of the drum over which the first magnet member does not extend providing a relatively non-magnetic zone which is long enough so that the lock can be disengaged when the drum is not rotating by disposing the second magnet means opposite said zone.

4,267,964

CENTRIFUGAL SEPARATOR WITH ROTATING PICK-UP TUBE

Carter P. Williams, Yosemite, Calif., assignor to Kobe, Inc., Huntington Park, Calif.

Filed Oct. 1, 1979, Ser. No. 80,420
Int. Cl.[3] B04B *11/08*; F04D *1/14*
U.S. Cl. 233—21 **10 Claims**



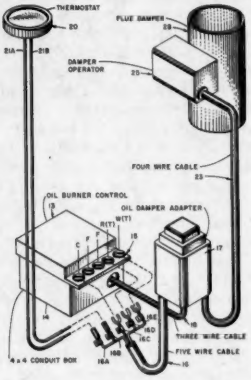
1. A centrifugal pitot pump having a casing; means for rotating the casing in a selected direction of rotation; means for delivering fluid to the interior of the casing; a stationary inner pitot tube having a fluid outlet relatively nearer the axis of rotation of the casing for withdrawing fluid from an intermediate region of the casing into the inner pitot tube; an outer pitot tube having a fluid outlet relatively nearer the periphery of the casing; and means for rotating the outer pitot tube in the same direction of rotation as the casing, but at a slower speed than the casing to withdraw fluid from a peripheral region of the casing into the outer pitot tube.

4,267,965

OIL BURNER CONTROL SYSTEM WITH FLUE DAMPER ADAPTER CIRCUIT

William F. Everett, Goshen, Ind., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Sep. 13, 1978, Ser. No. 941,963
Int. Cl.[3] F23N *3/00*; G05D *23/00*
U.S. Cl. 236—1 G **18 Claims**



1. In combination with an oil burning unit having a burner motor and ignition circuit; oil burner control means for energizing said burner motor and ignition circuit in response to a control signal; and a thermostat in a space to be heated by the unit for generating a call-for-heat signal, said unit exhausting combustion gases through a flue, the improvement comprising:

a flue damper assembly including a damper plate movable between an open position and a closed position;

damper operator means including a second motor for driving said damper plate to said positions and including means for generating a first signal when said damper plate is in said closed position and a second signal when said damper plate is in said open position; and

adapter circuit means comprising:

a source of energy connected in circuit with said thermostat and said second motor for energizing said second motor in response to a call-for-heat signal to move said damper plate to said open position, said damper operator means de-energizing said second motor when said damper plate is in said open position;

first switching circuit means including a first pair of contacts connected in circuit with said burner control means for generating said control signal to energize said burner motor and ignition circuit in response to said second signal of said damper operator means, and for removing said control signal when said call-for-heat signal is removed;

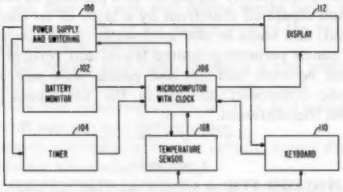
delay circuit means responsive to an input signal for generating an output signal a predetermined time after said input signal and coupled to said damper operator means for moving said damper plate to said closed position; and

second switching circuit means responsive to the de-energization of said burner motor and ignition circuit when said call-for-heat signal is removed by said thermostat for generating said input signal to said delay circuit means to close said damper plate after said predetermined time has lapsed.

4,267,966
PROGRAMMABLE THERMOSTAT

Robert M. Neel; James B. Waite, and Myron Yoknis, all of Ft. Collins, Colo., assignors to Teledyne Industries, Inc., Ft. Collins, Colo.

Filed Aug. 27, 1979, Ser. No. 69,870
Int. Cl.³ F23N *5/20*; G05B *11/01*
U.S. Cl. 236—46 A **10 Claims**



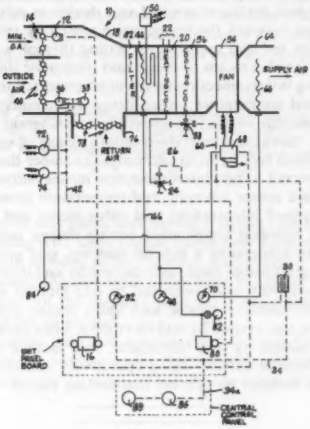
1. A programmable thermostat comprising:
a housing assembly;
switching means mounted on said assembly for selective operation by the user;
an indicator mounted on said assembly for signaling to the user;
a circuit unit mounted within said assembly and interconnected to receive signals from said switching means and to deliver signals to said indicator, said circuit unit including a read only memory permanently programmed to enable defining a pattern of unit values of temperature desired at different times on different days of a week selectively all individually and in various combinations of said days and the times therein, said circuit unit further including a random access memory, coupled to and addressable by said switching means, interrelated with said read only memory for effecting the selected particular definition of said pattern;
a temperature sensor mounted within said assembly and responsive to ambient air temperature to deliver a temperature-representative signal to said circuit unit;
and connecting means for coupling said circuit unit to an external device to be controlled in response to previous operation of said switching means and governed in response to said temperature-representative signal.

4,267,967
TWO-SPEED AUTOMATIC CONTROL OF SUPPLY FANS

Joseph H. Beck, North Merrick, and Paul F. Orilio, Brooklyn, both of N.Y., assignors to J.C. Penney Company Inc., New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,163
Int. Cl.³ F24F *7/00*; G05B *5/00*
U.S. Cl. 236—49 **10 Claims**

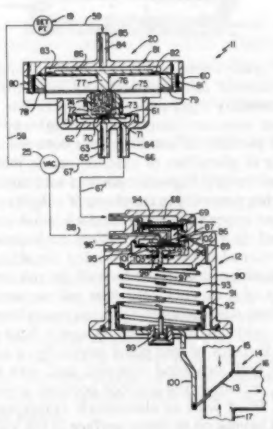
1. An energy-saving system for maintaining air temperature comfort in a zone of a structure comprising:
means for sensing the ambient temperature in the zone;
fan means for supplying air into the zone;
means for temperature conditioning the supplied air;
starter means for starting said fan means and having a high speed coil and a low speed coil;
two-speed motor means for driving said fan means to distribute the conditioned and supplied air in the zone, said motor means having a high speed and a low speed winding; and
control means for selectively coupling said high speed and said low speed winding to the corresponding one of the starter means coils to produce two fan driving speeds, each exceeding at least one-half of the rated maximum speed of the fan means, said control means being responsive to the temperature sensing means for separately actuating the temperature conditioning and having a selectable first operational state wherein irrespective of the temperature sensing means the low speed starter means coil and the corresponding motor means winding are energized to produce said low fan speed, with said low fan speed being less than the rated maximum speed of the motor so as to reduce energy consumption of the system, and a selectable second operational state wherein the high speed starter means coil and the corresponding motor means winding are energized to produce said high fan speed in response to the temperature sensing means irrespective of energy consumption, and automatic switching from the high fan speed to the low fan speed occurs when the ambient temperature sensed drops below a preselected temperature.



4,267,968
PNEUMATIC CONTROL SYSTEM AND PARTS THEREFOR AND METHODS OF MAKING THE SAME

Douglas R. Scott, Knoxville, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Division of Ser. No. 864,455, Dec. 27, 1977, Pat. No. 4,194,687.
This application Jul. 25, 1979, Ser. No. 60,671
Int. Cl.³ F24F *7/06*
U.S. Cl. 236—49 **13 Claims**



1. In a pneumatic control system for controlling a pneumatically operated device in relation to the operation of a pneu-

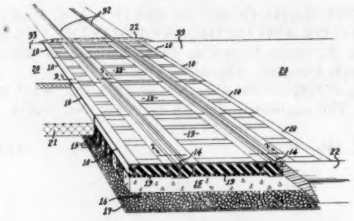
matic signal sending thermostat and a pneumatic signal sending set point adjuster, said thermostat having a temperature sensor and a pneumatically operated temperature setting means therefor, said set point adjuster having means for directing its said pneumatic signal to said setting means to set said temperature sensor to a particular temperature setting thereof, said thermostat having an output chamber for directing its said pneumatic signal to said device to control said device in relation to the differential between the temperature sensed by said temperature sensor and said temperature setting thereof, said thermostat having valve means to create said pneumatic signal thereof and having interconnection means interconnected to said valve means, said temperature sensor being interconnected to said interconnection means, the improvement wherein said pneumatically operated temperature setting means of said thermostat is located remote from said output chamber thereof and is interconnected to said interconnection means outboard of said temperature sensor whereby said temperature sensor is effectively disposed intermediate said valve means and said pneumatically operated temperature setting means, said temperature sensor comprising a bimetal member, said setting means comprising a flexible diaphragm carried by said thermostat and being operatively interconnected to said bimetal member by said interconnection means, said valve means comprising a fixed valve seat carried by said thermostat and a movable valve member carried by said thermostat, said flexible diaphragm and said bimetal member being operatively interconnected to said valve member by said interconnection means.

4,267,969

RAILROAD GRADE CROSSING CONSTRUCTION

Harvey E. Hales, and Edmund R. Fredrick, both of St. Augustine, Fla., assignors to Railroad Concrete Crosstie Corporation, St. Augustine, Fla.

Filed Aug. 24, 1979, Ser. No. 69,292
Int. Cl.[3] E01C 9/04
U.S. Cl. 238—8 **12 Claims**



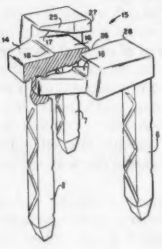
1. In a railroad grade crossing where a highway intersects a pair of parallel railroad rails supported by and affixed to a plurality of substantially rigid and non-compressible parallel ties, the associated structure interfacing the highway and the rails comprising a plurality of interior panels between said pair of rails and a pair of pluralities of exterior panels joining the outside of each rail to said highway, each of said interior and exterior panels being generally in the shape of a right rectangular prism having an upper rectangular surface, a lower rectangular surface, and four rectangular sides, each panel constructed of four railroad rail sections forming the sides of said panel and being positioned with the base of the rail section in the upper surface of the panel, said four rail sections being joined with sufficient reinforcing metal cross pieces to produce a rigid structure with all the remaining space between the upper and lower surfaces of said panel interiorly of said four rail sections filled with structural concrete, and with all exterior irregularities, including the exterior portions around said four rail sections, filled with an elastomeric compound; each said interior panel having on its lower surface in the vicinity of each corner a guideway opening through said lower surface and terminating spacedly downwardly from said upper surface and cooperating with respective and spaced studs firmly attached to and upwardly projecting from said parallel ties underlying said guideways, each said exterior panel having on its lower surface at least a pair of guideways opening through said lower surface and terminating spacedly downwardly from said upper surface, at least a pair of studs firmly attached to and upwardly projecting from respective and spaced said parallel ties underlying said pair of guideways; and each panel being substantially completely supported on a plurality of said parallel ties and separated therefrom by a layer of an elastomeric compound, said studs in said guideways of said interior and exterior panels permitting limited lateral and vertical relative movement between said ties and panels with said layer of elastomeric compound dampening the vibrational relative movement therebetween.

4,267,970

HOLDER FOR A GUIDING STRUCTURE

Marius H. Lubbers, Wassenaar, Netherlands, assignor to Everts & Van der Weyden Exploitatiemaatschappij Ewem/N.V., The Hague, Netherlands

Filed Jun. 13, 1979, Ser. No. 48,041
Claims priority, application Netherlands, Jun. 13, 1978, 7806398
Int. Cl.[3] E01B 9/28, 9/44
U.S. Cl. 238—310 **5 Claims**



1. A holder for receiving resilient clamping means and adapted to be anchored to a railway sleeper such that the clamping means resiliently bears upon an associated rail foot, said holder comprising a body having a pair of longitudinally spaced upstanding portions having opposed side surfaces defining a channel therebetween, each of said side surfaces including a portion which tapers inwardly with respect to said channel whereby to define, with such portion of the other side surface, a convergent mouth for said channel, each upstanding portion being undercut to define a receiving slot and said body having a downwardly sloping floor defining the bottom of such slot, said body including a laterally projecting portion defining a generally horizontal upper surface leading to said floor, said undercut portions presenting downwardly inclined overhang surfaces spaced above said floor, and said body also including depending anchor posts disposed in a triangular pattern, one below each upstanding portion and one below said laterally projecting portion.

4,267,971

METHOD AND MEANS OF PRESETTING THE OUTPUT RATE OF A CENTRIFUGAL PUMP AGRICULTURAL METERING SYSTEM

Douglas Johnston, Decatur, Ala., assignor to John Blue Company, New York, N.Y.

Continuation-in-part of Ser. No. 946,048, Sep. 26, 1978, abandoned. This application May 18, 1979, Ser. No. 40,309
Int. Cl.[3] B05B 9/06
U.S. Cl. 239—11 **16 Claims**

1. In a system for applying liquid agricultural chemicals to the soil from driver-operated self-propelled moving vehicle

means at a substantially constant preselected rate, in amount per unit area, substantially independent of vehicle speed, the combination comprising:

centrifugal pump means of the type having its outlet pressure substantially proportional to the square of its speed, for receiving liquid from a source of supply and delivering it to liquid discharge orifice means for applying the liquid to the soil, flow through said orifice means being substantially proportional to the square root of the pressure of liquid delivered thereto;

means for driving said pump means at a rate substantially directly proportional to vehicle means speed;

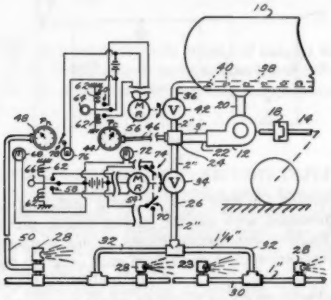
a delivery line connected to the outlet of said pump means;

a shut-off valve in said delivery line;

first means controllable by the vehicle means driver for operating said shut-off valve;

a by-pass line connected to the outlet of said pump means for returning liquid to the source of supply;

adjustable orifice means in said by-pass line for controlling upstream of said adjustable orifice means;



second means controllable by the driver while the vehicle means is moving for adjusting said adjustable orifice means;

and a pressure gauge readable by the driver while the vehicle means is moving and connected to said lines upstream of said valve and said adjustable orifice means;

whereby the driver can select an application rate, predetermined a pressure upstream of said valve when the latter is closed and when the vehicle means is moving at a predetermined speed with said pump means being driven which will result in the selected application rate when said valve is opened, close said valve, operate the vehicle means to move at the predetermined speed with said pump means being driven while the vehicle means is so moving, adjust said adjustable orifice means to attain said predetermined pressure in said lines upstream of said valve while the latter is closed, and then open said valve to apply liquid at the selected rate substantially independent of vehicle means speed.

4,267,972

PNEUMATICALLY OPERATED GATED IRRIGATION SYSTEM

Donald E. Bryant, Larned, Kans., assignor to FarmTronics Inc., Larned, Kans.

Filed Oct. 17, 1979, Ser. No. 85,588

Int. Cl.[3] **A01G** *25/02;* **F16K** *3/00, 31/12*

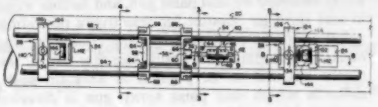
U.S. Cl. 239—66 **21 Claims**

1. In an irrigation system utilizing an irrigation pipe having longitudinally spaced openings therein from which water may be discharged, and a plurality of gates associated with respective openings and each movable between an open position in which water is permitted to discharge from the associated opening and a closed position sealing the opening, the improvement comprising:

a fluid-operated actuator having a cylinder component provided with a piston component therein;

means securing one of said components to said pipe, whereby the other component moves relative to the pipe in response to fluid pressure in said cylinder component;

a longitudinally shiftable operating member extending along said pipe, provided with means for operably coupling the



same with said gates, and having a passage therein communicating with said cylinder component for flow of fluid along the member to the cylinder component;

means connecting said other component to said member for movement of the member with the other component to operate the gates; and

means coupled with said member for delivering fluid under pressure to said passage for flow to said cylinder component, whereby to shift the member to open or close the gates.

4,267,973

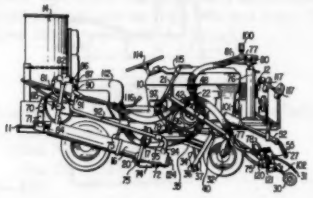
PARKING LOT AND HIGHWAY SAFETY LINE PAINTING MACHINE

James J. Stewart, 3817 Capers Ave., Columbia, S.C. 29205

Filed Jan. 27, 1978, Ser. No. 872,772

Int. Cl.[3] **B05C** *5/00*

U.S. Cl. 239—73 **13 Claims**



1. An implement for painting lines on the surface of highways, parking lots and the like which comprises:

a vehicle including a motor for propelling same, at least one steerable front ground engaging wheel and a frame;

an air compressor mounted on said frame in the forward portion of said vehicle;

a tank for paint mounted on the rearward portion of said vehicle;

an elongated pressurized paint container mounted on one side of said frame whereby it is inclined downwardly towards the front of said vehicle;

swivel clamp means mounted on said frame forward of said container;

boom means held by said clamp means whereby it extends downwardly towards the front of said vehicle, said boom means being selectively turnable about its longitudinal axis and selectively extensible along its longitudinal axis relative to said clamp means, said clamp means being selectively movable within an arc of movement as seen from the side and further within an arc of movement as seen from above;

an air spray paint gun mounted at the forward end of said boom means;

a first air conduit provided between said compressor and said paint container for applying air pressure to the latter;

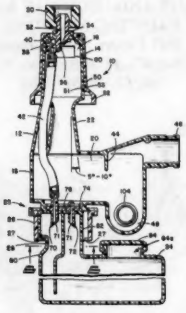
a second air conduit connecting said compressor to said paint spray gun;
a third air conduit connecting said compressor to the forward end of said container;
a first paint conduit from said paint tank to said container;
a second paint conduit connecting said container to said paint spray gun;
control valve means in said second air conduit for selectively actuating opening and closing said second air and paint conduits whereby paint and air under pressure are selectively received by said paint gun, and further valve means in said third air conduit for selectively providing air for agitating paint contained in said container; and guide means interconnected to said steerable wheel, said guide means adapted to be pointed at area on said surface towards which said paint spray gun is directed when supported by said boom means, whereby said paint spray gun is adapted to move in the direction to be travelled by said vehicle and to indicate where said paint spray gun will paint on said surface.

4,267,974

NEBULIZER DEVICE

Charles M. Kienholz, Upland, and Clifford D. Bennett, Alta Loma, both of Calif., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jul. 25, 1979, Ser. No. 60,393
Int. Cl.³ B67D *5/38*; A61M *11/06*
U.S. Cl. 239—74 **22 Claims**



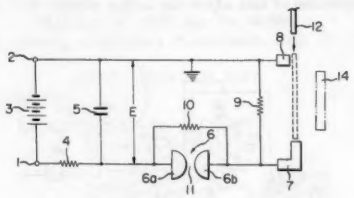
1. A nebulizer device comprising:
(a) a body defining an initial nebulization chamber, a subsequent baffling chamber and a venturi means therebetween;
(b) means on said body for connecting said nebulization chamber to a source of pressurized gas;
(c) air intake means disposed on said body adjacent said nebulization chamber for providing said nebulization chamber with air in predetermined quantities;
(d) aerosol means for producing a conical aerosol spray of fine particles of liquid entrained in said gas and subsequently flowing to said baffling chamber along said flow path, said aerosol means located in said nebulization chamber upstream of said venturi means such that flow of said aerosol through said venturi means draws air through said intake means thereby diluting said aerosol, said nebulization chamber, baffling chamber and venturi means configured so as to form a straight, uninterrupted flow path from said aerosol means to said baffling chamber;
(e) means for supplying said aerosol means with a liquid;
(f) said venturi means located downstream of said air intake means and defined by a converging section in flow communication with said nebulization chamber and a diverging section in flow communication with said baffling chamber, said venturi means increasing the flow rate of air through said intake means and directing said air and said aerosol into said baffling chamber, said aerosol means located in said nebulization chamber sufficiently upstream of said venturi means such that said conical spray impacts on said converging section of said venturi means; and
(g) outlet means in flow communication with said baffling chamber for directing said aerosol out of said baffling chamber.

4,267,975

APPARATUS FOR WIRE EXPLOSION SPRAY COATING

Takeshi Goto, Akashi; Akio Tanaka, Ono, and Yasuo Suzuki, Nagaokakyo, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe and Nissin Electric Co., Ltd., Kyoto, both of, Japan

Filed Mar. 19, 1979, Ser. No. 21,704
Claims priority, application Japan, Mar. 20, 1978, 53-32236[U]
Int. Cl.³ B05C *13/00*
U.S. Cl. 239—83 **3 Claims**



1. Apparatus for wire spray coating including capacitor means connected with electric power source means to be charged thereby, gap switch means having discharge electrodes which are spaced apart from each other so that a discharge is produced under a voltage applied by the capacitor means, and wire receiving terminals which are spaced apart to receive a length of wire of coating material therebetween, said terminals being connected with the capacitor means so that charge of the capacitor means is applied to the terminals through the switch means, said discharge electrodes being maintained at a fixed distance, wherein a discharge across the electrodes is readily produced when the electrodes are supplied with the voltage from the capacitor means, voltage dividing means for applying a fraction of the voltage across the capacitor means to the discharge electrodes and a remainder of the voltage to the wire receiving terminals when the wire is not in position between the terminals, but for applying substantially a total voltage of the capacitor means when the wire is in position between the terminals.

4,267,976

APPARATUS FOR VAPORIZING AND ATOMIZING LIQUIDS

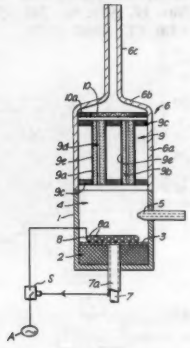
Francis R. Chatwin, Higher Polgassic, Lansallos, Polperro, Looe, Cornwall, England (PL13 2PY)

Filed Mar. 10, 1978, Ser. No. 885,341
Int. Cl.³ F02M *31/18*
U.S. Cl. 239—102 **9 Claims**

1. Apparatus for vaporising and atomising liquids comprising:
a casing,
means within said casing defining an internal chamber,
a heater within said chamber,
means for supplying electrical current to operate said heater,
a resonant plate within said chamber,
a transducer attached to said resonant plate, said transducer operating, when energised, to vibrate said plate at an ultrasonic frequency,
a liquid injector pipe projecting into said chamber,
a vapor discharge duct extending from said chamber,
a thermally conductive element in thermal contact with said

resonant plate and extending into contact with a heat source spaced from said apparatus, and

a thermal switch sensitive to the temperature of said thermally conductive element, said switch operating to disconnect said heater from its supply of current when said thermally conductive element attains a critical temperature in the vicinity of the operating temperature of said heater.



4,267,977

TEMPERATURE CONTROLLED UNIT INJECTOR

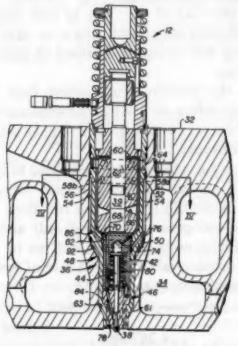
Alan R. Stockner, Chillicothe, and Michael K. Stratton, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US 79/00382, § 371 Date Jun. 4, 1981, § 102(e) Date Jun. 4, 1981, PCT Pub. No. WO80/02654, PCT Pub. Date Dec. 11, 1980.

This PCT application filed Jun. 4, 1979, Ser. No. 85,341

Int. Cl.³ B05B *15/00*

U.S. Cl. 239—132.3 **10 Claims**



1. A unit fuel injector apparatus (**12**) comprising:

a cylinder head (**32**) defining a bore (**50**) and inlet and outlet fluid passages (**58*a*, 58*b***) connected to the bore (**50**);

a retainer sleeve (**48**) having a nozzle end (**36**), an outer peripheral surface (**56**), a circumferential groove (**52**) opening on the surface (**56**), and first and second axially oriented passages (**54*a*, 54*c***) opening on the surface (**56**) and connected to the groove (**52**); and

means (**96**) for separating one portion (**52*a***) of the groove (**52**) from another portion (**52*b***) of the groove (**52**), the retainer sleeve (**48**) being releasably connected in the bore (**50**) and aligning the one portion (**52*a***) with the inlet passage (**58*a***) and the another portion (**52*b***) with the outlet passage (**58*b***), the first axially oriented passage (**54*a***) communicating temperature controlling fluid from the one portion (**52*a***) toward the nozzle end (**36**), and the second axially oriented passage (**54*c***) communicating temperature controlling fluid away from the nozzle end (**36**) and toward the another portion (**52*b***).

4,267,978

LIQUID DISTRIBUTION DEVICE IN LIQUID-VAPOR CONTACT APPARATUS

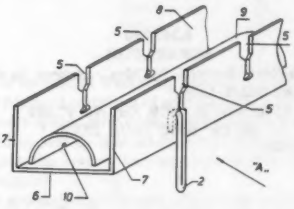
Rolf P. C. Manteufel, Epiceadreef 11, B-2180 Kalmthout-Heide, Belgium

Filed Aug. 21, 1979, Ser. No. 68,465

Claims priority, application Belgium, Jan. 9, 1979, 873352

Int. Cl.³ B05B *1/36, 1/20*

U.S. Cl. 239—193 **4 Claims**



1. A device for the even distribution of liquids onto an area, said device comprising a distributor trough having vertically extending walls, overflow slits distributed along said walls and liquid guide means extending from each said slit, said liquid guide means comprising a pin-shaped pair of arms spaced from each other, each said overflow slit being wider at the top and narrower at the bottom with said liquid guide means extending from the outside face of the bottom of each said overflow slit, each said liquid guide means having a free end being disposed below the level of the bottom of the trough.

4,267,979

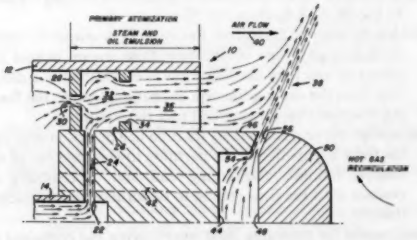
DUAL-PHASE ATOMIZER

George F. Lomax, Tyler, Tex., assignor to Howe-Baker Engineers, Inc., Tyler, Tex.

Filed Nov. 19, 1979, Ser. No. 95,301

Int. Cl.³ B05B *7/08;* F23D *11/40*

U.S. Cl. 239—419 **7 Claims**



1. In apparatus for atomizing a fluid fuel; an atomizer body having an inlet end, a distal outlet end, and a longitudinal axis extending between said ends, a chamber defined in said body through the inlet end thereof, at least one primary atomization port at the periphery of the body, said port generally paralleling the body and including inlet and outlet ends, a fluid passage communicating said chamber with said port between the inlet and outlet ends thereof, first means for supplying fluid fuel, second means for providing a primary flow of atomizing medium under pressure, one of said supplying means communicating with said port at the inlet end thereof, the other of said supplying means communicating with said port through said

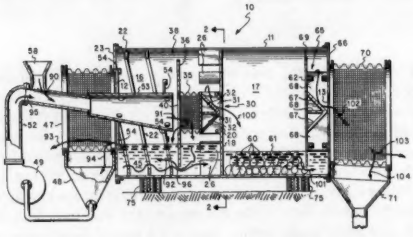
chamber and said fluid passage for an introduction, mixing and atomizing of the fluid fuel with the atomizing medium within the port and a subsequent pressurized discharge flow of atomized fuel from said port at the outlet end in a direction generally paralleling the longitudinal axis of said body, and means for introducing a secondary direction defining flow of atomizing medium laterally outward into the path of the discharge flow of atomized fuel at a greater velocity than that of the discharge flow to effect a laterally outward spreading of the atomized fuel relative to the body, and a thinning of the atomized fuel in a layer on the upstream surface of the secondary flow.

4,267,980

SEPARATOR

Albert E. LaPoint, Socorro, N. Mex., assignor to Cal West Metals, Long Beach, Calif.

Filed Nov. 26, 1979, Ser. No. 97,489
Int. Cl.[3] B02C *23/18, 23/08*
U.S. Cl. 241—20 **6 Claims**



1. Apparatus for separating an input material having floating and sinking fractions, comprising:

a separation container with two ends, one end for overflowing the floating fraction, and another end for discharging the sinking fraction;

an input flow stream to introduce the fractions to be separated and a fluid near the sinking fraction discharging end;

a partition inside the container to isolate the floating fraction to the floating fraction overflowing end;

means to separate fluid from the input flow stream to introduce at least a part of the input flow stream behind the partition, whereby the fluid flow is established in a direction from the sinking fraction discharging end to the floating fraction overflowing end past the partition;

means for moving the sinking fraction in a direction opposite the fluid flow path past the partition toward and out of the sinking fraction discharging end and substantially in contact with the flow stream to be scrubbingly contacted thereby;

and means for returning fluid overflowing the container at the floating fraction overflowing end to the input flow stream.

2. The apparatus of claim **1** further comprising:

a secondary sizing container for receiving the sinking fraction from the sinking fraction discharging end;

a quantity of grinding balls in the sizing container to reduce the size of the sinking fraction therein;

a partition in said sizing container to permit only sinking fraction particles of at least a predetermined small size pass;

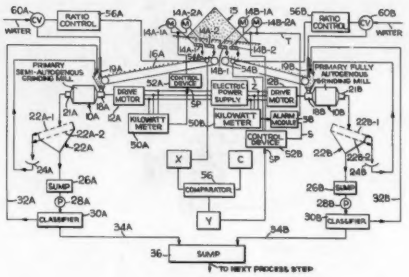
and means for discharging the sinking fraction which has passed the partition from said sizing container.

4,267,981

GRINDING SYSTEM AND METHOD UTILIZING CONSTANT FEED RATE SOURCE

Chester A. Rowland, Jr., Glendale, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 19, 1979, Ser. No. 95,392
Int. Cl.[3] B02C *25/00*
U.S. Cl. 241—30 **16 Claims**



1. A method of grinding mineral ore which is adapted for use where ore is required to be fed for grinding from a supply source at a substantially constant rate of feed and in which the grinding characteristics of said ore and the power required to grind a predetermined weight of said ore vary unpredictably during the grinding operation comprising the steps of:

(1) connecting a primary semi-autogenous grinding mill and a primary fully autogenous grinding mill in parallel relation with each other to an ore supply source;

(2) measuring the input power required to drive said semi-autogenous grinding mill;

(3) varying the ore feed rate to said semi-autogenous grinding mill whereby to maintain the input power required to drive said semi-autogenous grinding mill at a substantially constant value or set point;

(4) measuring the rate of ore flow to said semi-autogenous grinding mill with said input power to said semi-autogenous grinding mill being maintained at said substantially constant value;

(5) comparing the measured rate of ore flow to said semi-autogenous grinding mill with the substantially constant rate of ore flow required from said supply source whereby to obtain a differential value;

(6) and adjusting the rate of ore flow to said fully autogenous grinding mill to correspond to said differential value whereby to cause the sum of the ore flow rates to said primary semi-autogenous grinding mill and to said primary fully autogenous grinding mill to be substantially equal to said substantially constant rate of feed required to be fed from said supply source.

4,267,982

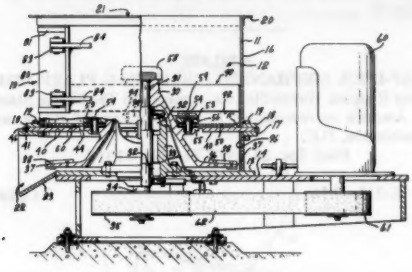
BARK SHREDDER

Anthony W. Hooper, Montreal, Canada, assignor to Uniweld Inc., West Sherbrooke, Canada

Filed Feb. 22, 1979, Ser. No. 13,814
Int. Cl.[3] B02C *18/18*
U.S. Cl. 241—257 R **13 Claims**

1. A bark shredder comprising a casing having a top tubular part and a bottom tubular part and means to detachably join the casing parts together, the casing defining a cylindrical working chamber, the chamber having a top inlet and a bottom symmetrical outlet, a rotor axially mounted in the chamber, a plurality of fixed shredding elements attached to the casing in a circle at one level of the chamber intermediate the inlet and outlet, the fixed shredding elements extending radially inwards from the casing into the chamber, means to detachably mount

in the circle the fixed shredding elements between the two parts, a plurality of rotating shredding elements pivoted to the rotor in a circle and located above but adjacent to the fixed shredding elements, the rotating shredding elements extending



radially outward from the rotor, the fixed and rotating shredding elements shaped to co-operate with each other to shred material in the chamber when the rotor is rotated in either direction.

4,267,983

THREAD DRAW-OFF APPARATUS

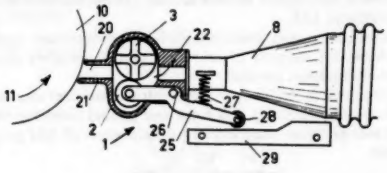
Erwin Leu, Horgen, Switzerland, assignor to Maschinenfabrik Schweiter AG, Horgen, Switzerland

Filed Apr. 28, 1980, Ser. No. 144,370

Claims priority, application Switzerland, May 16, 1979, 4564/79

Int. Cl.³ B65H *54/22*

U.S. Cl. 242—35.6 E **12 Claims**



1. Thread draw-off apparatus to pick off loose thread ends from a spool of textile material, such as a cross-wound cone or cop **(10)**, having

a suction element **(1)** positionable adjacent the spool;

two draw-off rollers **(2, 3)** located within the suction element to draw off thread ends from the spool,

and wherein, in accordance with the invention, the suction element includes

a nozzle portion **(21, 21')** adapted to be positioned with a nozzle opening **(20)** therein close to the spool **(10)**;

a suction fitting **(8)** adapted to be attached to a source of suction;

and means defining an airflow chamber **(22)** within the suction element and positioned between the nozzle portion **(21)** and the suction fitting **(8)**, the rollers **(2, 3)** being located in said chamber and freely rotatable therein, and driven by the stream of suction air passing through said chamber upon application of suction to the suction fitting.

4,267,984

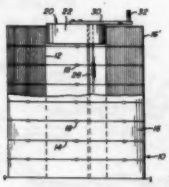
METHOD AND APPARATUS FOR SEPARATING STRIP COIL FROM WOUND CONSTRUCT BY ROTATION

William A. Box, Bethel Park, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Mar. 13, 1980, Ser. No. 129,965

Int. Cl.³ B65H *35/02*; B26F *3/00*

U.S. Cl. 242—56.4 **6 Claims**



1. A method of fracturing tabs for detaching a coiled strip from a wound construct of web material comprising a plurality of axially spaced strip coils, the strips being frangibly interconnected in side-by-side relation by intermittently spaced tabs bridging the parting line between adjacent strips comprising the steps of:

(a) grasping the free end of the strip to be separated at the inner diameter thereof; and

(b) imparting relative rotational movement between said strip and the remainder of the construct to cause the grasped strip to undergo a reduction in diameter in relation to that of said construct remainder.

4,267,985

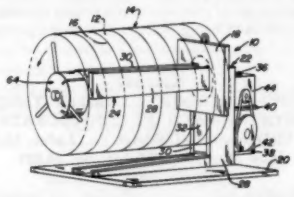
STRIP SEPARATOR AND PAYOUT APPARATUS

John W. Rogers, 22175 Douglas Rd., Shaker Heights, Ohio 44122

Filed Mar. 13, 1980, Ser. No. 129,966

Int. Cl.³ B65H *35/02*; B26F *3/00*

U.S. Cl. 242—56.4 **8 Claims**



1. Apparatus for detaching and dispensing strip material from a wound construct having an axial opening therethrough and including a plurality of axially spaced coils of strip material interconnected by frangible connections, said apparatus comprising:

(a) a frame including means for telescopically receiving said construct through the axial opening therein;

(b) a spinner rotatably attached to said frame, said spinner having an external diameter to be received in the axial opening of said construct;

(c) gripper means in said spinner for attaching the innermost free end of the strip to be separated; and

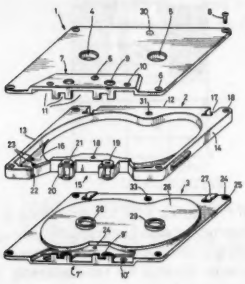
(d) mechanical drive means operatively connected to said spinner for rotating the same in a direction to create relative movement between the strip coil to be separated and the remainder of the construct to effect detachment of the frangible connections therebetween, said drive means being operative following separation of the strip coil to rotate said spinner for unwinding the strip material therein.

4,267,986

MAGNETIC TAPE CASSETTE

Noboru Uemura, Odawara; Shunzo Hatakeyama, Ibaragi, and Hidehisa Hashimoto, Funabashi, all of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,824
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—199 **7 Claims**



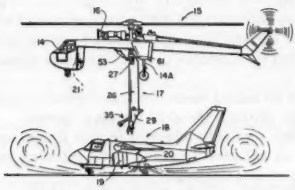
1. A magnetic cassette comprising a rectangular metallic intermediate frame, said frame having a long rear portion and a pair of shorter side portions, said frame having a front portion and a pair of reinforcing webs connecting the adjacent ends of the side portions and said front portion; said rear portion, said side portion and a part of said front portion having common top and bottom flat surfaces in parallel, the bottom surface of said webs being flush with said bottom flat surface; the inner walls of said rear, sides and front portions and the upper surface of said webs defining a cassette tape-containing space; a top plate and a bottom plate each of a plastic material in the form of substantially flat plates, means fastening said plates together with said intermediate frame there between along said top and bottom flat surfaces to thereby close said space; and means for aligning said intermediate metallic frame with said top and bottom plates, said aligning means including an opening in said frame, said opening being defined by said inner walls and the inner edges of said webs, and a land formed on one of said plates, said land being fitted within said opening.

4,267,987

HELICOPTER AIRBORNE LOAD SYSTEMS AND COMPOSITE AIRCRAFT CONFIGURATIONS

William R. McDonnell, 24 Oakleigh La., Ladue, Mo. 63124

Filed Mar. 29, 1979, Ser. No. 24,881
Int. Cl.[3] B64D *5/00*
U.S. Cl. 244—2 **3 Claims**



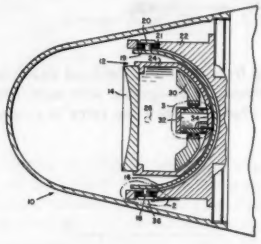
1. In a composite aircraft consisting of a rotary wing aircraft and a fixed wing aircraft, the improvement which comprises: a single elongated probe means for spatially interconnecting said aircrafts with said rotary wing aircraft above said fixed wing aircraft; means operably connecting said probe means to said rotary wing aircraft for movement relative to said rotary wing aircraft; cooperative means on said probe means and on said fixed wing aircraft to engage each other for securing the aircrafts together, said cooperative means on said fixed wing aircraft being close to the center of gravity of said fixed wing aircraft; and cooperative means between said probe means and said fixed wing aircraft for controllably pitching said fixed wing aircraft such that the thrust of said fixed wing aircraft propulsion is directed to assist the flight system of the composite aircraft.

4,267,988

SNAP-LOCK MECHANISM FOR HIGH-G PLATFORM

Aubrey Rodgers, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 23, 1979, Ser. No. 32,192
Int. Cl.[3] F41G *7/26*
U.S. Cl. 244—3.16 **7 Claims**



1. In a projectile having a platform assembly disposed for surviving a high-g launch phase, said platform assembly comprising:

a. a platform;

b. first and second gimbal members carried in gimballed relation therebetween and with said platform, said first and second gimbal members being disposed in concentric relation;

c. a rotor supported in said first gimbal member;

d. a first support assembly including compliant support means for support of said rotor in said first gimbal member;

e. a second support assembly including compliant support means for support of said second gimbal member in said platform; and,

f. a third support assembly including compliant support means for support of said first gimbal member in said second gimbal member;

g. snap-lock means cooperating with said support assemblies for rigidly securing said rotor and gimbal members into a stable position responsive to deceleration of said projectile.

4,267,989

TOY HOT AIR BALLOON

Kenneth D. Skaggs, 1805 Clement St., Alameda, Calif. 94604

Filed Sep. 7, 1979, Ser. No. 73,253
Int. Cl.[3] B64B *1/40*; A63H *27/10*
U.S. Cl. 244—31 **6 Claims**

1. A toy hot air balloon comprising:

a. a plurality of elongated gores constructed of relatively light-weight, thin material; said gores having opposed pairs of long and short edge portions;

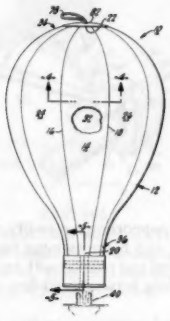
b. means for fastening said elongated gores together in side-by-side configuration at said long edge portions to form an enclosure having a top portion and a bottom portion, said bottom portion of said enclosure including an opening for the admission of heated air into said enclosure;

c. means for stiffening said bottom portion of said enclosure adjacent said opening;

d. means for supporting the top portion of said enclosure above said bottom portion of said enclosure; said means

for supporting the top of said enclosure adjacent said opening comprising:

an elongated member fastened at both ends to the inner surface of said enclosure forming an eye which passes from the inside to the outside of said enclosure and a tape portion generally overlapping the inner surface of



said enclosure over said attachment of said ends of said elongated member to the inner surface of said enclosure, a cover being fastened to said outer surface of said enclosure, and

e. means for fixing one short edge portion of each of said gores to said means for stiffening said bottom portion of said enclosure.

4,267,990

METHOD FOR STEERING AN AIRCRAFT

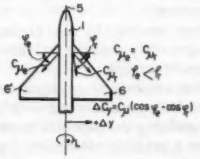
Werner Staudacher, Zorneding, Fed. Rep. of Germany, assignor to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 9, 1978, Ser. No. 959,076

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1977, 2751361

Int. Cl.³ B64C *15/00, 3/50*

U.S. Cl. 244—52 **8 Claims**



1. A method for steering an aircraft having a fuselage and two wings, by controlling the separation of vortical air flow at the leading edge of said wings by blowing means, comprising the steps of providing position variable blowing means in the aircraft fuselage adjacent to the leading edge of both wings whereby the angle of the blowing direction may be varied relative to a line extending perpendicularly to the roll axis of the aircraft fuselage, blowing a flowing medium laterally outwardly from said blowing means over said aircraft wings substantially in parallel to said leading edge of said aircraft wings, and differentially controlling the angular position of said blowing means whereby said aircraft may be controlled with respect to its roll axis, its pitch axis, and its yaw axis.

4,267,991

PORTABLE RUNWAY

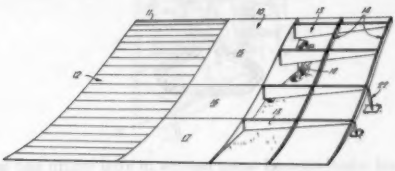
Douglas R. Taylor, Margate, England, assignor to The Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Feb. 28, 1979, Ser. No. 15,919

Claims priority, application United Kingdom, Mar. 3, 1978, 8562/78; Mar. 3, 1978, 8563/78

Int. Cl.³ B64F *1/00*

U.S. Cl. 244—63 **6 Claims**



1. A portable Ski-Jump runway for use with V/STOL aircraft employing a bicycle type main carriage and secondary outrigger wheels comprising:

a vehicle having a chassis portion constituting a foremost length of ramp, said vehicle being selected from the group of vehicles comprising a truck and a trailer;

a rearmost length of ramp, said rearmost length of ramp being moveable between a first operative position in which said foremost length of ramp and said rearmost length of ramp are aligned to form a continuous central main Ski-Jump runway ramp section having side edges, and a second storage position in which said rearmost length of ramp is stored on top of said foremost length of ramp for transportation purposes;

outrigger frames adapted to be cantilevered from said side edges when said rearmost length of ramp is in its operative position; and

decking adapted to be mounted on said outrigger frames to provide outer secondary Ski-Jump runway ramp sections, whereby in use the main undercarriage of the aircraft travels along said central main Ski-Jump runway ramp section and the secondary outrigger wheels travel along said outer secondary Ski-Jump runway ramp sections, said outer secondary Ski-Jump runway ramp sections having a substantially lighter weight than the weight of said central main Ski-Jump runway ramp section.

4,267,992

TIRE/WHEEL CONCEPT

Philip M. Harper, Sr., Bellevue, Wash., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 893,865, Apr. 16, 1978, abandoned. This application Dec. 12, 1979, Ser. No. 103,836

Int. Cl.³ B64C *25/32*; B60C *5/00*

U.S. Cl. 244—103 R **11 Claims**

1. An aircraft and tire-wheel combination comprising:

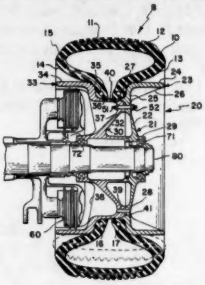
an aircraft having wings with wheel wells situated therein;

means for reducing wing drag profile in the area of said wheel wells including;

a tire having beads, a tread area and inner connecting sidewalls, said sidewalls constructed to fold laterally along their midpoint lines to a degree dependent upon loading;

a wheel having a tire bead retaining channel and leg means extending axially outward from the channel, said leg means constructed to abut, support, and complement the tire sidewall under various loading conditions, under severe dynamic loading the tire sidewalls meeting and shocks being transmitted directly from the ground through the sidewalls to the said leg means; and

braking means with surface area dependent upon the axial length of said wheel channel and the radius of the wheel;



said wheel channel being narrow in axial length and said wheel large in radius.

4,267,993

ARRANGEMENT FOR MOUNTING SPEAKER UNIT TO VEHICLE PANEL

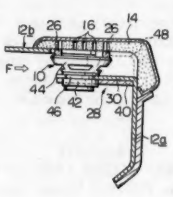
Kenzo Shimizu, and Yoshio Matsuno, both of Yokosuka, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 20, 1978, Ser. No. 944,005

Claims priority, application Japan, Dec. 15, 1977, 52-169285[U]

Int. Cl.³ G12B *9/00*

U.S. Cl. 248—27.1 **3 Claims**



1. A vehicle comprising:

a panel which defines a portion of the body structure of said vehicle and is integrally formed with a speaker supporter section, said speaker supporter section including a first portion which is substantially flat and has at one end thereof a catch portion, and a second portion which integrally connects said first portion to the major portion of said panel in a manner that the first portion is parallelly spaced apart from the major portion, said catch portion including two resilient tangs which are respectively formed at the leading end portions thereof with latching abutments which extend toward each other; and

a speaker unit having a magnet case which is formed around a groove, said speaker unit being held by said catch portion of said speaker supporter section by inserting said two resilient tangs into said groove of said magnet case; and

reinforcing members which are fixed to said first and second portions to increase the mechanical strength of the same.

4,267,994

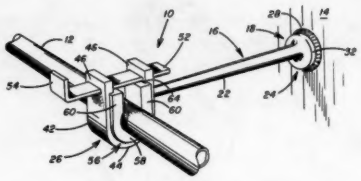
PIPE SUPPORTING APPARATUS

Paul C. Lynch, Rte. 6, Box 60A, Fairmont, W. Va. 26554, and Ervin M. Driver, 312 Graveline La., Gautier, Miss. 39567

Filed Apr. 20, 1979, Ser. No. 31,741

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—65 **7 Claims**



1. Apparatus for supporting a pipe-like member comprising,

a brace member, said brace member having a first end portion and a second end portion with an axially tapered body portion extending between said first and second end portions,

an expanded head portion extending from said first end portion,

said expanded head portion being coaxially aligned with said tapered body portion,

said expanded head portion including an annular portion having a preselected cross-sectional area,

a frusto-conical portion extending outwardly and coaxially from said annular portion,

said frusto-conical portion having an end portion with a cross-sectional area less than said annular portion cross-sectional area,

said frusto-conical portion end portion having a planar surface adapted to abut the surface of a supporting structure, said frusto-conical portion and said annular portion forming an annular recess around said expanded head portion between said annular expanded head portion and the supporting structure,

said annular recess being arranged to receive a weld and thereby provide a maximum surface of said frusto-conical portion for welded engagement with the supporting structure,

support means extending from said second end portion for receiving the pipe-like member to securely support the pipe-like member,

said support means including a substantially U-shaped member secured to and extending from said brace member second portion,

a resilient liner received by said U-shaped member adapted to a compressibly engage in surrounding relation the pipe-like member, and

a pin member removably engageable with said U-shaped member to form an enclosure with said resilient liner for securely retaining the pipe-like member in said U-shaped member in a position substantially perpendicular to said brace member.

4,267,995

WIRE HOLDER

Ronald R. McMillan, Box 114, Jewell, Kans. 66949

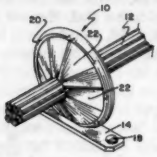
Filed Oct. 9, 1979, Ser. No. 82,608

Int. Cl.³ F16L *3/08*

U.S. Cl. 248—74 R **3 Claims**

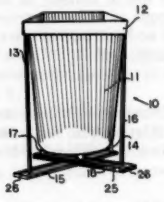
1. A wire holder for holding a bundle of wires comprising a base; a rim integrally bound to said base; a plurality of overlapping generally triangular shaped elastic members, each elastic member having a base and an apex, said base of each elastic member being mounted in said rim to have said members radially disposed with respect to said rim, said elastic members in a closed position essentially define a plane and unidirection-

ally flaring when receiving and holding said bundle, said elasticity of each member when holding said bundle bias said



members toward said closed position for firmly gripping, holding, and restraining said bundle.

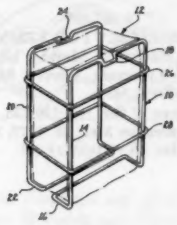
4,267,996
BAG HOLDER APPARATUS
Joseph A. Turcott, 107 Aspen Cir., Leesburg, Fla. 32748
Filed Jul. 13, 1978, Ser. No. 925,541
Int. Cl.[2] A63B *55/04*
U.S. Cl. 248—97 **10 Claims**



1. A supporting stand for holding open leaf bags or the like in an open position comprising in combination:
a first base member;
a first pair of resilient legs connected to said first base member, one leg on each end portion of said base member;
a second base member;
a second pair of resilient legs connected to said second base member, one leg on each end portion of said base member;
attaching means for movably attaching said first and second base members so that one base member can be rotated on the other from a folded to a supportive position;
locking means for locking said first and second base members generally perpendicular to each other in a supportive position; and
bag engaging tips formed on each end of each of said first pair and each of said second pair of legs, whereby said first and second base members can be positioned in a supportive position with their legs extending therefrom and said legs bowed to engage a folded lip of a leaf bag, or the like, with said bag engaging tips to hold said bag open end open with the bias of said bowed legs.

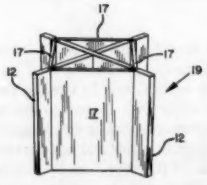
4,267,997
SUPPORT FRAME FOR A FLEXIBLE BAG
William E. Meier, 3512 E. Montecito, Phoenix, Ariz. 85018
Filed Nov. 15, 1979, Ser. No. 94,642
Int. Cl.[3] A63B *55/04*
U.S. Cl. 248—97 **4 Claims**

1. A skeletal frame for circumscribingly supporting a collapsible bag, said skeletal frame comprising in combination:
(a) a first upright wire like element having a width and length generally coincident with the width and length of the collapsible bag when it is in the expanded state;
(b) a second upright wire like element having a width and length generally coincident with the width and length of the collapsible bag when it is in the expanded state;
(c) vertically spaced first and second band means for interconnecting said first and second upright elements a distance apart from one another which distance is generally coincident with the breadth of the collapsible bag when it is in the expanded state;



(d) means including an inwardly bent section of each of said first and second upright elements at the lower end of each of said first and second upright elements for providing vertical support to the collapsible bag placed within said skeletal frame; and
(e) handle means disposed at the upper end of each of said first and second upright elements for manually transporting said skeletal frame.

4,267,998
STAND
James F. Weirich, 200 Posada Del Sol #40, Novato, Calif. 94947
Filed Jul. 20, 1979, Ser. No. 59,312
Int. Cl.[3] F16M *11/32*
U.S. Cl. 248—165 **4 Claims**



1. A series of panels for interconnection together to form a load supporting and elevating stand, comprising:
a pair of similar leg-member panels, each being generally rectangular and having a slot extending inwardly from one edge perpendicularly to the edge, approximately half way into the panel, said slots being configured so as to permit the two leg-member panels to be interlocked together in an X-configuration;
each leg-member panel also including a pair of grooves in each of its two opposed faces, parallel to the slot and spaced outwardly therefrom;
four brace panels, each being generally rectangular and sized to fit closely between grooves of adjacent faces of the leg-member panels when they are interlocked together in the X-configuration; and
a top panel sized to lie on the top edges of the leg-member panels when they are interlocked together;
whereby load supporting and elevating stand may be quickly assembled together by interlocking the leg-member panels together to form an X-shaped base, then assembling the base panels into the base by sliding them into the grooves, adding strength and stability to the base, then assembling

the top panel onto the top of the base to complete the stand.

4,267,999

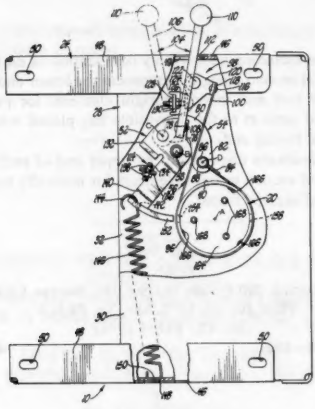
SUPPORT ASSEMBLY FOR VEHICLE SEAT

Russell F. Chekirda; Randall T. Murphy, both of Morristown, Tenn., and Walter Lyszczarz, Warren, Mich., assignors to Lear Siegler, Inc., Troy, Mich.

Continuation-in-part of Ser. No. 729,735, Oct. 5, 1976, abandoned. This application Mar. 25, 1977, Ser. No. 781,248

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—418 **20 Claims**



1. In a vehicle seat support assembly including a floor support and a seat mounting support pivotal on the floor support about a generally vertical axis to change the orientation of a seat supported thereby with respect to the associated vehicle, a locking mechanism comprising: an elongated generally flexible band having opposite ends and an intermediate portion that extends about one of the supports; overcenter locking means mounted on the other support and connected to the opposite ends of the band; said locking means being movable to move the mechanism between a first overcenter locking position where the band is tensioned about the one support to prevent pivotal movement of the seat mounting support and a second nonlocking position where the band tension is reduced relative to the locking position so as to allow the pivotal movement of the seat mounting support; and means for selectively moving the locking means to position the locking mechanism in either the locking or nonlocking position; the floor support including an upwardly projecting tube having a round outer surface about which the intermediate portion of the band extends; the seat mounting support including a seat frame on which the overcenter locking means is mounted; the locking means including a locking member pivotally supported on the frame about a first axis and also including a link having a first end pivoted to the locking member about a second axis and a second end connected to one end of the band; the seat frame including a stop that engages the locking member to position the mechanism in the locking position; and the stop including an adjustable member mounted on the seat frame and engaged with the locking member in an adjustable manner to adjustably control positioning of the locking mechanism in the locking position.

4,268,000

APPARATUS FOR FIXING SHEETS ON A BASE

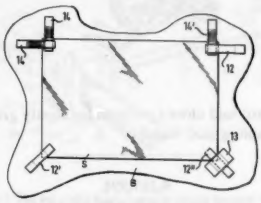
Heinz J. Ulm, Seydlitzstr. 65, 8000 Munich-50, Fed. Rep. of Germany

Filed Jan. 19, 1978, Ser. No. 870,813

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702729; Dec. 30, 1977, 2759006

Int. Cl.³ A47G *1/16*

U.S. Cl. 248—467 **2 Claims**



1. An apparatus for attaching flexible sheets onto a base by holding a first corner of the sheet stationarily, by guiding a second and adjacent corner for expansion and contraction movement in a direction away from said first corner while tensioning the sheet outwardly along said direction, and by tensioning third and fourth corners of the sheet outwardly substantially at an angle of 45° with respect to the adjacent edge of the sheet and without guidance, wherein the apparatus comprises the combination of:

a base;

a flexible sheet;

laterally, flexible, nonextensible pivoting strips applied in interconnecting relation from said base to said first corner of said flexible sheet for stationarily holding the latter and to said second corner of said sheet for guiding same in said direction;

a resiliently extensible tensioning strip applied in interconnecting relation to said base and said second corner of said sheet for tensioning of said sheet outward in said direction; and

further resiliently extensible tensioning strips applied in interconnecting relation to said base and third and fourth corners of said flexible sheet for said urging of said corners outward substantially at said 45° angle, said pivoting strips and tensioning strips each having one end adhesively secured to the corresponding corner of said sheet and their opposite ends adhesively secured to said base, and holding said sheet flush against the surface of said base, in which said strips at said first corner comprise first and second pivoting strips having respective first adhesively surfaced ends fixed atop said first corner of said sheet, said first and second pivoting strips respectively being applied in a horizontal direction and a vertical direction to said first corner and having outer adhesively faced ends adhesively fixed to the surface of said base, with the intermediate portion of said first and second nonextensible pivoting strips being nonadhesively faced and thereby free to flex laterally with respect to said sheet and base;

said strips at said second corner comprising a third nonextensible pivoting strip and a first tensioning strip having a resiliently extensible central portion, said third pivoting strip and first tensioning strip having adhesively faced inner ends adhesively secured to the outwardly facing surface of said sheet at said second corner, said third nonextensible pivoting strip extending outward beyond said second corner in a direction substantially parallel to the adjacent one of said first and second nonextensible pivoting strips at said first corner and having an adhesively faced outer end surface adhesively fixed to the surface of said base, said first tensioning strip extending outward from said sheet substantially in a direction opposite that of the other of said first and second pivoting strips and substantially perpendicular to said third pivoting strip

and having an outer end adhesively fixed to the surface of said base, said third pivoting strip and first tensioning strip each having central portions between their adhesively faced ends, which central portions are faced nonadhesively and are respectively nonextensible and resiliently extensible, said sheet having a first edge connecting said first and second corners, said one and third nonextensible pivoting strips preventing movement of said first edge of said sheet in a direction toward the opposite edge of said sheet while resiliently permitting expansion and contraction of said sheet along said first edge thereof;

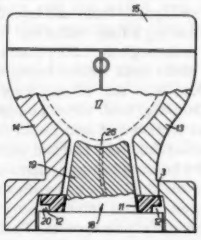
said strips at said third and fourth corners of said sheet comprising a second extensible tensioning strip at said third corner and a third extensible tensioning strip at the fourth corner of said sheet, said second and third tensioning strips each having an adhesively faced inner end overlying and adhesively fixed to the respective third and fourth corner of said sheet, said second and third tensioning strips extending outward from said third and fourth corners, respectively, substantially at a 45° angle to said opposite sheet edge and terminating in adhesively faced outer ends adhesively secured to the surface of said base, said second and third tensioning strips each having a nonadhesive but resiliently stretchable central portion not fixed directly to said sheet or base and which is normally tensioned to hold said sheet snugly and flatly against said surface of said base.

4,268,001

MOLD FOR CASTING CERAMIC MATERIALS

Giuseppe Lippa, Brescia, Italy, assignor to American Standard Inc., New York, N.Y.

Filed Jun. 6, 1980, Ser. No. 156,972
Claims priority, application Italy, May 23, 1979, 46845 A/79
Int. Cl.³ B28B *7/16*
U.S. Cl. 249—58 **10 Claims**



1. A mold comprising a plurality of mold parts of which one constitutes a seat made of a non-casting material, the other mold part or parts being made of casting plaster, a surface region of the seat, in the assembled mold, forming part of the casting cavity, which surface region is bounded by closely adjacent regions of the other mold part or parts such that during casting a solid cast portion of the article is cast against the seat, the mold parts being adapted so that the mold can be opened after casting to leave the article resting on the seat whereby the article can be lifted away on the seat.

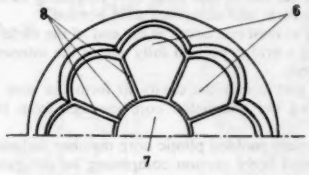
4,268,002

MOULD FOR PACKAGING DESSERTS

Rene Deveaux, Le Raincy, France, assignor to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Jun. 12, 1980, Ser. No. 158,892
Claims priority, application France, Jun. 21, 1979, 79 15946
Int. Cl.³ B29C *1/00*
U.S. Cl. 249—127 **5 Claims**

1. A mould for packaging desserts, particulary for ice-cream cake with coating syrup, in the form of a cup comprising an opening through which the dessert is introduced into and removed from the mould, the mould comprising a first compartment near the opening which defines a first space and which is intended to receive a product solid at the storage temperature and a second compartment which defines a second space below the first space and which is intended to receive a syrup liquid at the storage temperature, the second compartment comprising several cells distributed in the base of the cup, each of the cells communicating through an opening with the first compartment and being separated from the other cells by walls simultaneously acting as stiffeners for the mould.

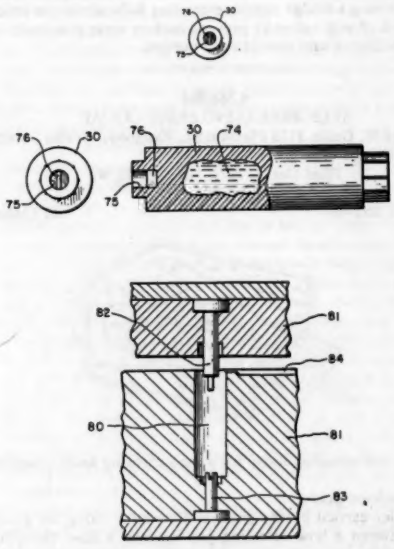


4,268,003

MOLD CORE AND METHOD AND APPARATUS FOR MANUFACTURE

James P. Liautaud, River Bluff Rd., Trout Valley, Cary, Ill. 60013

Continuation of Ser. No. 847,950, Nov. 2, 1977, abandoned, which is a division of Ser. No. 736,323, Oct. 28, 1976, Pat. No. 4,075,273, which is a division of Ser. No. 676,682, Apr. 14, 1976, abandoned. This application Aug. 14, 1979, Ser. No. 66,619
Int. Cl.³ B28B *7/16, 1/24;* B29F *1/00;* A23P *1/00*
U.S. Cl. 249—142 **10 Claims**



1. The method of molding an elongated core member including an elongated bore-shaped recess in one end thereof and a solid elongated portion extending from the interior end of said recess such said interior end of said recess is subject to suck-in

during post-molding cooling of the core member, said method comprising the steps of:

forming an elongated mold cavity corresponding to the surface of the core member;

positioning a mold core to extend into said cavity a distance substantially less than the length of said cavity to form the bore-shaped recess, a substantial length of said cavity beyond the end of said mold core remaining substantially open to form said elongated solid portion;

providing at least one notch at the end of the mold core for forming a bridge portion fully across the interior end of the recess;

injecting plastic into the cavity to form the core member removing the completed core member from the mold cavity.

5. A one-piece molded plastic core member including:

an elongated body portion comprising an elongated body portion comprising an elongated bore-shaped recess of substantially less extent than said body portion in one end thereof;

a solid elongated portion of said body portion extending axially from the interior end of said recess; and

means including a bridge portion extending fully across said recess at said interior end thereof for preventing suck-in at said interior end during post-molding cooling of the core member.

9. Apparatus for molding a core member having an elongated body portion and at least one elongated bore-shaped recess in one end thereof, said core member having an elongated solid, relatively slower-cooling central portion extending from the interior end of said recess, said apparatus comprising:

a mold defining an elongated cavity corresponding to the body portion;

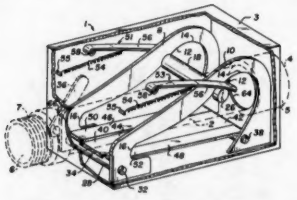
a mold core extensible into said cavity a distance less than the length of said cavity to form the bore-shaped recess, a substantial length of said cavity beyond the end of said mold core being substantially open to form the central solid portion, and

means including a notch in the end of said mold core for forming a bridge portion extending fully across the inside end of said recess to prevent suck-in upon post-molding cooling of said central solid portion.

4,268,004
SELF-RELEASING HOSE CLAMP

Leonard W. Gatin, 1173 Pleasant St., Kamloops, British Columbia, Canada (V2C 3C1)

Filed Oct. 1, 1979, Ser. No. 80,742
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—5 **17 Claims**



1. A self-releasing clamp for a fluid carrying hose, comprising:

an inclined guide;

a roller carried by the guide and movable along the guide between a hose releasing position and a hose clamping position;

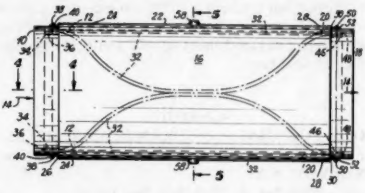
a hose support for holding the hose against the roller in the clamping position; and

means for providing a space between the roller and the hose support when the roller is in the clamping position, said space providing means permitting a limited flow of fluid past the clamp to increase pressure in the hose downstream from the clamp when fluid flow downstream from the clamp is stopped, expanding the hose between the hose support and the roller and moving the roller to the hose releasing position the space providing means comprising means for moving the hose support away from the roller and for securing the hose support in a position spaced-apart from the roller when the roller is in the clamping position, and a pivotal connection on the hose support and means for holding the hose support against the hose when the roller is in the clamping position.

4,268,005
PINCH VALVE

Spiros G. Raftis, Pittsburgh, and Lawrence L. Schneider, Carnegie, both of Pa., assignors to Red Valve Company, Inc., Carnegie, Pa.

Filed Dec. 8, 1978, Ser. No. 967,842
Int. Cl.³ F16L *55/14*
U.S. Cl. 251—5 **5 Claims**



1. A pinch valve construction comprising a cylindrical fluid inlet duct section, said inlet duct section having a fluid inlet end for entry of fluid through the inlet duct section into the pinch valve, a cylindrical outlet duct section, said outlet duct section being coaxial with and spaced from said inlet duct section, said outlet duct section having a fluid outlet end for egress of fluid from the pinch valve through the outlet duct section, said fluid outlet end of said outlet duct section being spaced from and opposite to said fluid inlet end of said inlet duct section, a cylindrical valve housing, said valve housing being coaxial with said inlet duct section and said outlet duct section, and extending between said fluid inlet end and said fluid outlet end, one end of said valve housing being concentrically mounted to the outer surface of said fluid inlet end with a fluid-impervious mounting, the other end of said valve housing being concentrically mounted to the outer surface of said fluid outlet end with a fluid-impervious mounting, a flexible resilient cylindrical sleeve, said sleeve being concentrically disposed within and spaced from said valve housing, fluid-impervious means to secure one end of said sleeve to the inner surface of said fluid inlet end, said one end of said sleeve and said one end of said valve housing straddling said fluid inlet end of said inlet duct section, said means to secure the one end of said sleeve including a first clamping ring within said sleeve, said first ring being concentric and coaxial with both the one end of said sleeve and said fluid inlet end, said first ring being contiguous with the one end of said sleeve, means comprising a first plurality of threaded bolts to clamp said first clamping ring to the one end of said sleeve, each of said first plurality of bolts having a terminal nut external to and contiguous with the fluid inlet end of the inlet duct section, fluid-impervious means to secure the other end of said sleeve to the inner surface of said fluid outlet end, said other end of said sleeve and said other end of said valve housing straddling said fluid outlet end of said outlet duct section, said means to secure the other end of said sleeve including a second clamping ring within said sleeve, said second ring being concentric and coaxial with both the other end of said sleeve and said fluid outlet end, said second ring being contiguous with the other end of said sleeve, means comprising a second plurality of threaded bolts to clamp said second

clamping ring to the other end of said sleeve, each of said second plurality of bolts having a terminal nut external to and contiguous with the fluid outlet end of the outlet duct section, and means to impress a fluid between said sleeve and said valve housing so that said sleeve is inwardly deformable to pinch and curtail the flow of fluid through said sleeve.

4,268,006

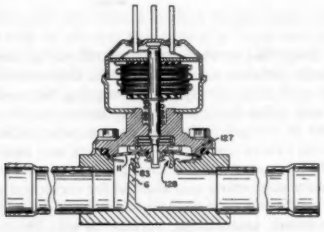
MODULATING DIAPHRAGM VALVE

Bernard L. Kunz, Collinsville, Ill., and David P. Hargraves, Webster Groves, Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Continuation-in-part of Ser. No. 911,883, Jun. 2, 1978, abandoned. This application Sep. 4, 1979, Ser. No. 72,552

Int. Cl.³ F16K *31/04*

U.S. Cl. 251—11 **7 Claims**



1. A modulating diaphragm actuated valve, comprising:

a valve body having an inlet, an outlet, a main flow port between said inlet and said outlet, and a chamber part above said main flow port on the inlet side of said main flow port;

a diaphragm mounted for movement in said chamber between a first position closing said main flow port and a plurality of open positions with respect to said main flow port, said diaphragm having an opening in it to permit fluid flow between said inlet and said chamber part;

a baffle plate in supporting relationship to said diaphragm, said baffle having a fluid pervious portion along the input side of said valve and a fluid impervious portion along the outlet side of said valve, said fluid impervious portion acting to prevent inlet fluid pressure from affecting operation of said diaphragm;

pilot valve means mounted to said diaphragm and movable therewith, said pilot valve means having a pilot opening therethrough, said pilot opening communicating with said chamber part and said outlet;

a valve pin mounted in said pilot opening, said valve pin having a part closing said pilot opening;

means for varying the position of said valve pin with respect to said pilot valve means, said last-mentioned means including a heat motor having a plurality of selective axial positions, said heat motor being axially aligned with said valve pin and operatively connected thereto for controlling the position of said valve pin directly in a plurality of positions of said valve pin;

a first spring mounted in said chamber and adapted to exert a force on said diaphragm so as to urge said diaphragm toward its closed position;

second spring means operatively connected to said actuator means and adapted to bias said valve pin toward its open position in at least one position of said diaphragm; and

damper means mounted for movement with said valve pin for damping oscillation of said diaphragm.

4,268,007

VALVE ACTUATING EQUIPMENT

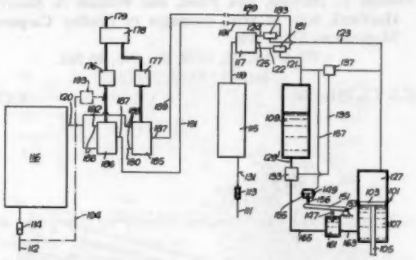
Jeremy B. Chittenden, Lytes Cary Manor, Lytes Cary, Somerton, Somerset, England

Filed Jul. 15, 1977, Ser. No. 816,203

Claims priority, application United Kingdom, Jul. 22, 1976, 30489/76; Feb. 9, 1977, 5328/77; Feb. 9, 1977, 5329/77; Jun. 23, 1977, 26321/77

Int. Cl.³ F16K *31/02, 31/122*

U.S. Cl. 251—30 **18 Claims**



9. In combination, a valve having a gate reciprocally movable between a first end position and a second end position, and actuating equipment for the valve, said equipment comprising:

at least one cylinder and piston mechanically connected to the gate of the valve, said at least one cylinder and piston providing first and second cylinder chambers;

a first hydraulic liquid reservoir;

liquid conduit means connecting said first hydraulic liquid reservoir to said first chamber;

a gas reservoir for compressed gas;

a non-return valve;

a gas inlet for the supply therethrough of compressed gas to said equipment;

control means for said compressed gas;

gas conduit means connecting said gas inlet through said non-return valve to said gas reservoir, connecting said gas reservoir to said control means, and connecting said control means to said first hydraulic liquid reservoir; and

pressure transmitting means connecting said control means to said second chamber;

said control means being selectively operable to permit passage of compressed gas to said first hydraulic liquid reservoir to pressurize it and thereby deliver liquid to said first chamber to pressurize said first chamber, and to permit passage of compressed gas to said pressure transmitting means to pressurize said second chamber, pressurization of said first chamber with hydraulic liquid inducing first movement of said at least one piston relative to said at least one cylinder to move the gate in one direction from said first end position to said second end position, the arrangement being such that delivery of hydraulic liquid to said first chamber is used for effecting movement of said gate in said one direction throughout substantially the whole travel of the gate from said first end position to said second end position, and pressurization of said second chamber inducing second movement of said at least one piston relative to said at least one cylinder to move the gate in the reverse directon from said second end position to said first end position;

said control means comprising first and second solenoid operated valves and means for supplying electricity thereto, said gas conduit means connecting said first solenoid operated value to said first hydraulic liquid reservoir, and said pressure transmitting means connecting said second solenoid operated valve to said second chamber, one of said solenoid operated valves being normally de-energized and the other of them being normally energized

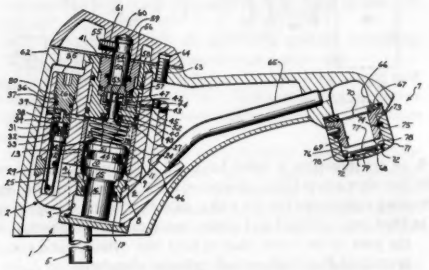
whereby said other of them operates automatically upon cessation of the supply of electricity.

4,268,008

PUSH BUTTON FAUCET

Thomas G. Barnum, Fox Point, and William A. Smart, Jr., Hartland, both of Wis., assignors to Bradley Corporation, Menomonee Falls, Wis.

Filed Oct. 22, 1979, Ser. No. 86,764
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—44 **6 Claims**



1. A faucet for delivering a predetermined volume of liquid in a set period of time comprises:

a control valve for controlling the flow of liquid through the faucet includes a valve body having an inlet for connection to a liquid supply line and an outlet, and a bore extending therethrough;

a valve seat disposed within said bore;

a movable plunger having a front face and a rear face positioned in said bore, the front face of said plunger being normally seated upon the valve seat preventing the flow of water from said inlet to said outlet;

a bypass circuit leading from the inlet through a timing mechanism to a pressure chamber behind the rear face of the plunger so that supply line pressure sensed by the rear face of the plunger maintains the valve in a closed position;

manually actuatable pilot valve means for relieving the pressure in said pressure chamber so that the supply line pressure can move the front face of the plunger off the valve seat to open the valve;

said plunger includes an elongated nose extending from its front face, said nose having an internal flow passage formed therethrough which permits liquid to flow from said inlet through said passage to said outlet when said valve is in its open position; and

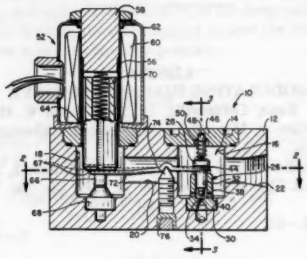
flow control means disposed in the passage in the plunger nose, said flow control means reduces the effective diameter of said passage to provide a jet action as liquid flows therethrough which creates a pressure differential across the valve seat and results in a reduced pressure that is less than supply line pressure to act on the front face of the plunger so that when the pilot valve has been actuated and supply line pressure has been relieved in the pressure chamber the control valve remains open until the pressure chamber is refilled by liquid flowing through the bypass circuit and the pressure sensed by the rear face of the plunger exceeds that on the front face whereupon the plunger moves to seat upon the valve seat and stop the flow of liquid through the faucet.

4,268,009

SOLENOID VALVE

Walter Allen, Jr., Prospect, Conn., assignor to Peter Paul Electronics, New Britain, Conn.

Filed Jun. 6, 1979, Ser. No. 46,024
Int. Cl.³ F16K *31/10*
U.S. Cl. 251—138 **10 Claims**



1. A solenoid-operated fluid control valve comprising a valve body defining a valve chamber, fluid inlet and outlet passages each respectively communicating between the exterior of said valve body and said chamber, means defining a valve seat in said valve chamber and an outlet orifice opening through said valve seat at the inner end of said outlet passage, an axially elongated seal pin having a seating surface thereon, guide means supporting said seal pin for reciprocal movement toward and away from said valve seat between closed and open positions, said seating surface in said closed position sealingly engaging said valve seat to prevent fluid flow from said valve chamber through said outlet orifice and said outlet passage, means for biasing said seal pin toward its closed position, a lever wholly disposed within said valve chamber and engageable with said seal pin, a fulcrum screw threadably engaged in said valve body and extending into said valve chamber and supporting said lever for pivotal movement within said valve chamber, a solenoid assembly mounted on said valve body and including a solenoid plunger supported for reciprocal movement toward and away from said lever between first and second positions, respectively, means for biasing said plunger to its first position wherein said plunger bears against said lever and said lever engages said seal pin and maintains said seal pin in its open position, and magnetic means for moving said solenoid from its first to its second position and for maintaining said plunger in its second position, said seal pin being biased to and retained in its closed position by said seal pin biasing means when said plunger is in its second position.

4,268,010

OPERATING HANDLE FOR BOTTOM OPERATED RAILWAY TANK CAR VALVE

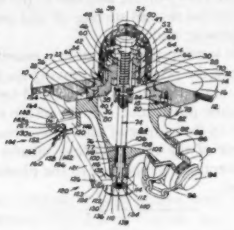
Gunter R. Behle, St. Charles, Mo., assignor to ACF Industries, Inc., New York, N.Y.

Division of Ser. No. 955,966, Oct. 30, 1978. This application Jan. 14, 1980, Ser. No. 112,039
Int. Cl.³ F16K *31/60, 35/00*
U.S. Cl. 251—144 **6 Claims**

1. In a railway tank car bottom outlet lading valve assembly, an operating handle assembly for the lading valve comprising:

an outlet chamber extending vertically below said lading valve and having a spout having a center line which makes an angle of significantly less than 90° with respect to the horizontal; said spout having a removable cap at its lower out end; an operating shaft extending vertically within said outlet chamber having a non-round shaft connection portion near the bottom thereof; an operating handle pivotably mounted adjacent said shaft non-round connection portion said handle having a handle connection portion including a ratchet assembly for engaging said

shaft non-round connection portion; a handle-storing bracket for the distal end of the operating handle mounted above said shaft connection portion adjacent the tank car bottom; and removable keeper means separate from said removable cap for maintaining the distal end of said handle within said bracket, whereby said removeable keeper means may be removed both when said cap is removed



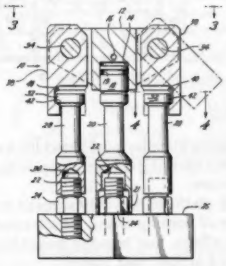
and when said cap remains in place on said spout, and said handle may be pivoted to a generally horizontal position wherein said handle is unobstructed by said spout and is rotatable to rotate said handle connection portion and said shaft through engagement of said ratchet assembly with said shaft connection portion, and thus move the lading valve between open and closed positions.

4,268,011

STUD TENSIONER FOR BLOWOUT PREVENTER

Ross D. Randall, Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Jun. 22, 1979, Ser. No. 51,427
Int. Cl.³ E21B *19/00*
U.S. Cl. 254—29 A **2 Claims**



1. A stud tensioner for tensioning the studs of a blowout preventer bonnet comprising

a body having a pair of recesses forming cylinders and a passage communicating with said cylinders,

a piston positioned within each of said cylinders and having a piston rod,

the rods of said pistons extending from said body in parallel relationship to each other and having a centering recess in their outer ends adapted to be positioned over two opposite studs and nuts of the bonnet,

a pair of tension rods having internal threads for threaded engagement with the outer end of bonnet studs on one end of said tension rods,

an enlarged head on the outer end of each tension rod,

swinging links, and

means for pivotally connecting said swinging links to said body,

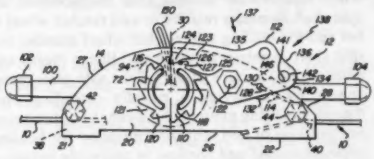
said swinging links having a recess adapted to engage the enlarged heads on said tension rods to exert tension thereon whereby application of pressure to said cylinders exerts tension in the tension rods and the studs engaged by the tension rods.

4,268,012

ADJUSTABLE LENGTH STRAP TIE DOWN APPARATUS

Walter J. Ruehle, 14000 E. Progress Way, Denver, Colo. 80232, and Robert E. Bronson, 710 Holly, Denver, Colo. 80220

Filed Aug. 20, 1979, Ser. No. 67,767
Int. Cl.³ B65D *67/02*; B60P *7/10*
U.S. Cl. 254—223 **11 Claims**



1. In apparatus for fixedly securing one object relative to another object and comprising:

an elongated continuous length strap means for being attached to the one object and for engaging and holding the other objects by tension;

attachment means fixedly non-adjustably connected to opposite ends of said strap means for fixedly securing the opposite ends of said strap means relative to the other object;

rotatable shaft means for winding and unwinding said strap means to adjustably tension said strap means;

slot means in said shaft means having a sufficient width for slidably adjustably receiving and retaining an intermediate loop portion of said strap means for enabling adjustment of the effective length of said strap means by varying the length of said intermediate loop portion and for enabling portions of said effective length of said strap means next adjacent said rotatable shaft means and portions of said intermediate loop portion next adjacent said rotatable shaft means to be simultaneously wound and tensioned and unwound and untensioned by rotation of said rotatable shaft means;

ratchet means operably engageable with said shaft means for releasably holding said shaft means against unwinding rotation during and after tensioning of said strap means;

elongated operating handle means operably connected with said rotatable shaft means for causing rotation thereof;

an elongated frame means having a pair of elongated spaced parallel side plate members having coaxial aligned bores for rotatably mounting said rotatable shaft means;

said rotatable shaft means comprising a pair of elongated split shaft members extending between said side plate members and being spaced from one another to define said slot means and having opposite end portions extending through and rotatably supported in said coaxial aligned bores in side plate members;

said ratchet means having a ratchet wheel member mounted on one juxtapositioned pair of said opposite end portions of said split shaft members and a pawl member mounted on the adjacent one of said side plate members;

said elongated operating handle means comprising an elongated operating handle member slidably mounted on the other juxtapositioned pair of said opposite end portions of said split shaft members adjacent the other of said side plate members, the invention of assembly and mounting means for said shaft means and said ratchet means comprising:

each of said shaft members having a segmental circular cross-sectional configuration of less than 180° with inner and outer arcuate peripheral surfaces extending between said side wall portions and through said coaxial aligned bores, the outer arcuate surfaces having a radius

approximately equal to the radius of said coaxial aligned bores;

a pair of circumferentially spaced arcuate slots in said ratchet wheel member having radii approximately equal to the radii of the arcuate inner and outer surfaces of said split shaft members and being coaxial therewith;

a first end portion of each split shaft member being received in and confined and held in spaced relationship by one of said arcuate slots;

radially extending flange means on said first end portion of each split shaft member axially adjacent said ratchet wheel member for limiting axial displacement of said split shaft members relative to said ratchet wheel member and for holding said ratchet wheel member on said split shaft members between said flange means and the adjacent side surface of one of the side plate members;

a spacer means having a radially extending opening therein and being mounted between the opposite second end portions of said split shaft members for holding the opposite second end portions in uniformly spaced coaxial relationship with said arcuate slots and having a radial extending abutment surface for abutting engagement with the adjacent side surface of the other one of the side plate members to limit axial displacement of the split shaft assembly;

said elongated handle member being slidably mounted in and extending through the aligned radially extending bores in the opposite end portions of said split shaft members and through said radially extending opening in said spacer means and limiting axial relative axial displacement between said spacer means and said split shaft members; and

retaining means on opposite end portions of said handle member for preventing removal of said handle member from said aligned bores in said split shaft members.

4,268,013

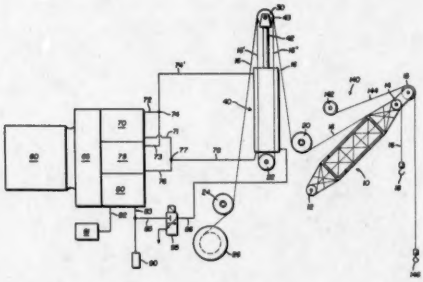
CRANE MOTION COMPENSATOR

Farooq A. Khan, Houston, Tex., assignor to NL Industries, Inc., New York, N.Y.

Filed Jun. 12, 1978, Ser. No. 914,834

Int. Cl.³ B66D *1/48*

U.S. Cl. 254—392 **14 Claims**



1. A motion compensator for use with a crane which lifts loads from a vertically and erratically moving deck such as an offshore heaving deck comprising:

a displaceable compensating sheave to receive a lift cable of the crane and for displacing the cable in proportion to displacement of the moving deck;

a piston, piston rod and cylinder arrangement for effecting the displacement of the compensating sheave, the piston being movable within the cylinder, the piston rod being interconnected between the piston and the displaceable sheave, and the piston and piston rod having first and second surfaces on one side thereof for respectively receiving the application of pneumatic and hydraulic pressure;

pressure means for applying a pneumatic force to said first surface of said piston and piston rod arrangement to provide at least a portion of the force for displacing the piston in the direction of the sheave;

a variable displacement hydraulic pump selectively varying the hydraulic flow volume and rate to the other side of the piston and to the second surface of said piston and piston rod arrangement; and

control means sensing the vertical movement of a deck and responding to the position of a moving deck by regulating the flow volume and rate output of said variable displacement hydraulic pump such that the piston rod is displaced in response to the output of said power means to achieve displacement of the compensating sheave by an amount which is directly proportional to the displacement of the moving deck.

4,268,014

TRANSPORT LIFT TRUCK FOR METALLURGICAL VESSELS, PARTICULARLY STEEL MILL CONVERTERS

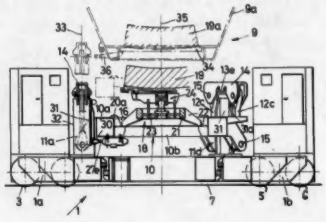
Karlheinz Langlitz, Mülheim, and Günter Schmitz, Duisburg, both of Fed. Rep. of Germany, assignors to Mannesmann Demag AG, Duisburg, Fed. Rep. of Germany

Filed Jan. 10, 1980, Ser. No. 111,088

Claims priority, application Fed. Rep. of Germany, Jan. 29, 1979, 2903361

Int. Cl.³ B65G *7/00*

U.S. Cl. 266—165 **7 Claims**



1. A combination metallurgical vessel lift truck and metallurgical vessel parts carrying device comprising

(a) a truck frame;

(b) a hoisting platform movably secured to said frame;

(c) a plurality of hoisting means for selectively elevating said hoisting platform, said hoisting means being circumferentially spaced around said frame;

(d) pivotally attached pendulum rods extending between each said hoisting means and said hoisting platform; and

(e) a removable carrying device for metallurgical vessel parts, positionable on said hoisting platform centrally of said spaced hoisting means.

4,268,015

BOTTOM OUTLET OR DISCHARGE FOR USE IN METALLURGICAL VESSELS FOR STEEL MELTS, PARTICULARLY TUNDISHES

Ernst Lührsen, Bad Schwalbach; Godehard Süssmuth, Marktredwitz, and Klaus Walden, Buxtehude, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden and Hamburger Stahlwerke GmbH, Hamburg, both of, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,569

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1978, 2807123

Int. Cl.³ C21C *7/00*

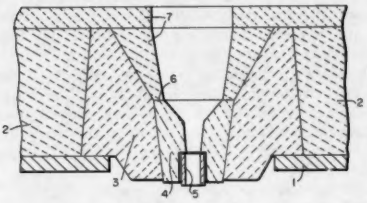
U.S. Cl. 266—236 **8 Claims**

1. A bottom outlet or discharge for use in metallurgical

vessels for steel melts, particularly tundishes, said bottom outlet or discharge comprising:

a sleeve brick;

a nozzle brick positioned within said sleeve brick, said nozzle brick having therethrough a discharge opening;



a highly wear-resistant tubular sleeve fitted within said discharge opening of said nozzle brick; and

said sleeve brick, said nozzle brick and said tubular sleeve are formed of materials having thermal expansions at 1400° C. of from 1.0 to 1.15%, from 0.5 to 0.8% and from 1.1 to 1.25%, respectively.

4,268,016

VALVE ELEMENT FOR SLIDING TYPE VALVE JOINTS ON THE OUTLET OF VESSELS CONTAINING MOLTEN METAL AND PROCESS FOR MAKING SAME

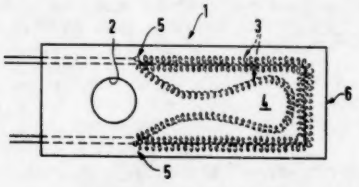
Axel Eschner, Wiesbaden; Hermann Leupold, and Peter Jeschke, both of Walluf, all of Fed. Rep. of Germany, assignors to Didier-Werke AG, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,678

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1978, 2826709

Int. Cl.³ C21C 5/42

U.S. Cl. 266—236 **23 Claims**



1. A valve plate of sliding valve joints on vessels containing molten metal, said valve plate being constituted of a refractory material and having a flow passage therein for alignment with a flow passage in said vessel and a closing surface section for closing the flow passage in said vessel and has a molded-in electrical heating conductor, the improvement wherein the major portion of said heating conductor is disposed in said closing surface section of said plate to heat said closing surface section when the flow passage therein is in alignment with said flow passage in said vessel.

4,268,017

REACTOR WITH EXTRACTABLE FEED NOZZLE

Robert N. Cole, Sarnia, Canada, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1979, Ser. No. 107,898

Int. Cl.³ C21B 7/16

U.S. Cl. 266—265 **6 Claims**

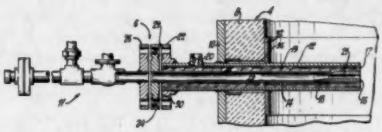
1. In combination;

(a) a reactor for the chemical or catalytic conversion of hydrocarbons having an outer metallic shell and an inner refractory lining;

(b) at least one nozzle shroud projecting through an aperture in said shell and said lining;

(c) a reactor feed nozzle disposed within a void in said nozzle shroud and concentrically positioned therein;

(d) a compressible insulative refractory fiber wrapped about said one nozzle to a diameter greater than an inner diameter of said nozzle shroud, said fiber being compressed to slideably fit said nozzle within said shroud;



(e) a low melting-point material wrapped about said compressed insulative refractory fiber, which upon heating allows said insulative refractory fiber to expand to said inner diameter of said shroud, thus completely filling said void in said nozzle shroud.

4,268,018

ELECTRICALLY CONDUCTIVE, TELESCOPING SPRING

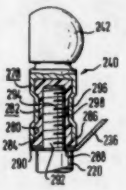
Rolf Langanke, Boppard, Fed. Rep. of Germany, assignor to Stabilus GmbH, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,094

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1977, 7724548[U]

Int. Cl.³ F16F 9/54

U.S. Cl. 267—120 **8 Claims**



1. In a spring arrangement comprising (a) a spring including a cylinder member bounding a cavity and having an axis, a plunger member secured to said cylinder member for axial movement inward and outward of said cavity, and resilient means in said cavity for biasing said plunger member outward of said cavity, said plunger member conductively engaging said cylinder member during at least a portion of said axial movement; (b) an electrically conductive terminal mounted on each of said members outside said cavity; and (c) connecting means for connecting each of said members to associated structure for movement relative thereto, the improvement wherein each connecting means comprises:

(1) a first connector element carried by one member of said spring, said first connector element being made of metallic material and formed with a recess opening towards said one member and terminating in a rim portion bounding the open end thereof for receipt therein of a reduced-diameter end portion of said one member, said reduced-diameter end portion defining at the juncture thereof with the main portion of said one member a shoulder facing said rim portion of said connector element;

(2) a second connector element coupled to said first connector element for pivotal movement relative thereto;

(3) fastening means for fastening said second connector element to said associated structure;

(4) insulating means, including a substantially cup-shaped member of insulating material in said recess in surround-

ing relation to the end and sides of said reduced-diameter end portion and a flange member of insulating material interposed between said rim portion and said shoulder, for electrically insulating said one member from said first connector element, thereby preventing the flow of electric current in a path including said first and second connector elements; and

(5) means for respectively securing said end portion of said one member to said cup-shaped member and said cup-shaped member to said first connector element.

4,268,019

FIXTURE AND METHOD FOR REPAIRING TRACK LINKS

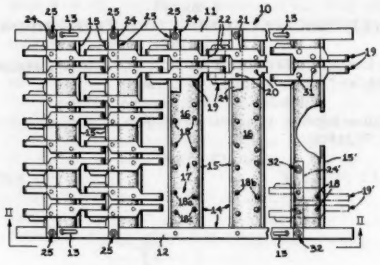
Dean W. Martin, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US79/00283, § 371 Date Apr. 30, 1979, § 102(e) Date Apr. 30, 1979, PCT Pub. No. WO80/02396, PCT Pub. Date Nov. 13, 1980.

This PCT application filed Apr. 30, 1979, Ser. No. 85,649

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—43 **27 Claims**



1. A fixture (10) for repairing track links (19) of a track assembly for a track-type vehicle comprising

support means (14) for supporting a plurality of said track links (19) thereon,

locating means (17) for positioning said track links (19) on upper surfaces (16) of said support means (14) to expose upper rail surfaces (20) of said track links (19), and

clamping means (23) for releasably clamping said track links (19) on the upper surfaces of said support means (14).

4,268,020

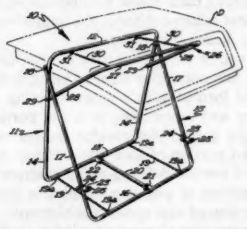
SUPPORT DEVICE FOR AUTOMOTIVE BODY PARTS

Arthur E. Wood, Rte. 3, Box 3, Cambridge, Minn. 55008

Filed Aug. 9, 1979, Ser. No. 65,130

Int. Cl.³ B25B *11/00*

U.S. Cl. 269—88 **3 Claims**



1. A collapsible support device for supporting body parts of an automobile such as doors, hoods, fenders and the like, comprising:

a rectangular frame including spaced apart substantially parallel upper and lower transverse frame members and a pair of substantially parallel generally vertical frame members integral with said transverse frame members,

a generally U-shaped support frame comprising a lower transverse frame member and a pair of vertical frame members integral with said transverse frame members and extending angularly therefrom,

means pivotally connected to the upper end portion of each vertical frame member of the U-shaped support frame with the upper end portion of a vertical frame member of the rectangular frame to permit pivoting movement of the frames with respect to each other between folded, collapsed and unfolded, erect positions, said frame members when in the collapsed position being disposed in substantially side-by-side relation, and when in the unfolded erect position diverging angularly downwardly with respect to each other,

means interconnecting the transverse frame member of the U-shaped support frame with the lower transverse frame member of the rectangular frame to limit movement of the frames in an unfolding direction,

a pair of support elements each being adjustably mounted on the vertical frame members of said U-shaped support frame and cooperating with the rectangular and support frames when the latter are in the unfolded erect position for supporting an automotive body part such as a door, hood, fender or the like in inclined position thereon,

a U-shaped table frame including a transverse frame member and a pair of longitudinal frame members integral with and extending angularly from the transverse frame member,

means pivotally connecting each longitudinal frame member of the table frame with one of the vertical frame members of the rectangular frame to permit pivoting movement of the table frame between the raised and lowered positions, the table frame when in the lowered position being disposed in substantially side-by-side relation with the rectangular frame, said table frame when in the raised position extending angularly upwardly from the rectangular frame and cooperating with the latter for supporting an automotive body part such as a door, hood, fender or the like thereon,

and means on said rectangular frame engaging said table frame for releasably retaining the latter in the raised position.

4,268,021

TRANSPORTATION ARRANGEMENT FOR SHEETLIKE RECORDING CARRIERS

Thomas Rutishauser, Uerikon; Roland Reichlin, Zurich; Claudius Viviani, Mönchaltorf, and Albert Rutishauser, Uerikon, all of Switzerland, assignors to Rutishauser Data AG, Stafa, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,925

Claims priority, application Switzerland, Jan. 23, 1978, 679781/78

Int. Cl.³ B65H *3/06, 5/06, 29/22*

U.S. Cl. 271—4 **7 Claims**

1. In apparatus for transporting separate sheets of paper or the like through equipment by which information can be imparted onto each sheet line by line, the combination of:

a platen rotatable to and past a given angular position at which said information can be imparted onto a sheet disposed on said platen;

means for driving said platen stepwise,

means including at least one feed roll for feeding said separate sheets singularly from a supply into a conveying path toward said platen,

a cooperating pair of transporting rolls disposed in said path between said feeding means and platen for grasping a fed sheet and feeding it onward toward said platen when at least one of said transporting rolls is driven,

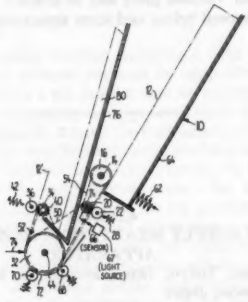
said transporting rolls being located in said path downstream

from said feed roll a distance less than the path length of a said sheet,

means for maintaining said feed roll in constant and continuous pressure contact with said sheet supply and with each single sheet fed by said feed roll until after the fed sheet is grasped by said transporting rolls for constantly and continuously controlling the movement of each sheet by said feed roll until after it is under the control of said transporting rolls,

roll drive means including releasable coupling means connected between said platen and said one transporting roll for driving said one transporting roll by said platen,

sheet sensing means coupled to said releasable coupling means for detecting the advancement of a sheet along said path to a predetermined sensing position located a fraction of said sheet length downstream from said transporting rolls for releasing said coupling means to stop the drive of said transporting rolls and halt the said onward feeding thereby of a sheet which is then under grasp by said transporting rolls,



means for restarting the onward feeding of a sheet past said sensing means and through said platen of the halted sheet by re-engaging said coupling means to cause driving of said transporting rolls again,

said platen having at least one nip located downstream from said transporting rolls a distance less then the path length of a fed sheet for keeping a sheet fed by the transporting rolls under control thereof at least until the sheet is grasped by the platen at said nip, and

means cooperating with said feeding means and coupling means for causing said feed roll to feed a sheet forward upon said re-engaging of said coupling means but at a speed slower than said transporting rolls for spacing successive sheets to allow detection thereof by said sheet sensing means,

said predetermined sensing position being spaced a given distance from said angular position so that said information can be imparted onto said sheet precisely on each desired predetermined line of said sheet as it is stepped by said platen and its driving means.

4,268,022

CONFORMING DOCUMENT ALIGNER

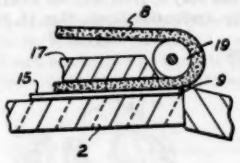
John H. Looney, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1979, Ser. No. 71,331
Int. Cl.[3] B65H *5/02, 9/04*
U.S. Cl. 271—7 **7 Claims**

1. In a copier having a platen for exposing documents thereon, the improvement of a document registration system, comprising:

a raised registration edge at the forward end of the platen; and

at least one compressible foam document aligning belt located adjacent to and above said registration edge, said alignment belt extending a short distance over said platen and conforming to said registration edge such that the documents engaged by said belt are pulled toward said registration edge with minimum friction and reduced registration edge impact, and means to compress said



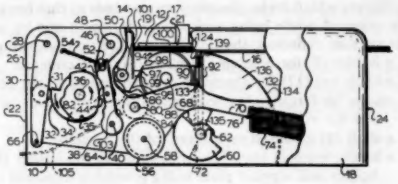
compressible foam belt over said raised registration edge allowing said belt to expand downwardly below the top of said edge to push down the lead edge of a document adjacent said registration edge in order to control document up-curl and registration edge jumping.

4,268,023

DOCUMENT-FEEDING APPARATUS

Carl P. Anderson, Menlo Park, Calif., assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 20, 1979, Ser. No. 67,689
Int. Cl.[3] B65H *3/12*
U.S. Cl. 271—94 **11 Claims**



1. A sheet-feeding device comprising:

means forming a document tray having a generally planar portion and a portion deformed to extend away from the plane of the planar portion, said tray means being adapted to supportively engage a stack of sheet material such that one end portion thereof extends beyond said planar portion to overlie said deformed portion, said deformed portion having at least one longitudinally-extending slot and a plurality of inlet openings formed therein;

pump means including walls forming a chamber and a vane disposed within said chamber, said vane having edges which sealingly engage the walls of said chamber, such that when said vane is actuated in one direction it sweeps through said chamber momentarily reducing the pressure therein so as to draw air through said inlet openings to momentarily reduce the pressure in the space between said deformed portion and the end portion of the facing sheet of material, the reduction of pressure being sufficient to cause the said end portion of the facing sheet to be bowed over said deformed portion;

document feed means disposed to extend through said longitudinally-extending slot;

presser means for causing the bowed sheet portion to be frictionally engaged by said feed means so as to withdraw the sheet from said stack of material; and

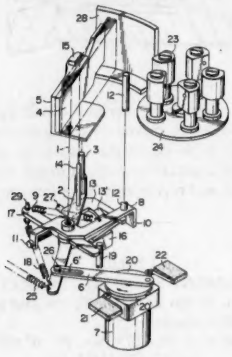
drive means for driving said feed means, said pump means, and said presser means in cyclic fashion so that each sheet in said stack is serially removed therefrom and discharged from said device.

4,268,024

BANK NOTE HOLDING METHOD FOR BANK NOTE COUNTING MACHINE

Eiichi Kokubo, and Tuyoshi Miyagawa, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed May 8, 1979, Ser. No. 37,011
Claims priority, application Japan, May 11, 1978, 53/55964
Int. Cl.[3] B65H *3/42*
U.S. Cl. 271—95 2 Claims



1. A bank note holding mechanism for use in a bank note counting machine having a frame, and a plurality of suction cylinders which make planetary movements so that bank notes are counted while being sucked and deflected one by one by the suction cylinders, the holding mechanism comprising:

a holder (5) for receiving bank notes to be counted;

a keep rod (12) for clamping the bank notes to the holder;

means for forcing clamped bank notes into contact with the suction cylinders;

a shaft (1) mounted on a frame of the machine;

a holder support plate (2) for supporting the holder (5), the holder and support plate being pivotably mounted on the shaft (1);

a motor (7) for rotating said support plate about for shaft (1);

means for interconnecting said motor and said support plate;

an actuating plate (8) having the keep rod (12), said actuating plate being pivotably mounted on the shaft (1);

a first spring (9) connected at one end to the actuating plate (8) for biasing the same away from the suction cylinders (23);

a spring holding plate (17) pivotably mounted on the shaft (1) and connected to the other end of the first spring (9); and

a second spring (18) connected at the opposite ends thereof to the holder support plate (2) and the spring holding plate (17) for rigidly holding the bank notes between the holder (5) and the keep rod (12).

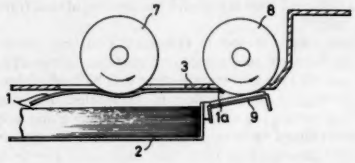
4,268,025

SHEET FEEDING APPARATUS

Seizi Murayoshi, Machida, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 15, 1979, Ser. No. 94,757
Claims priority, application Japan, Nov. 21, 1978, 53-143867
Int. Cl.[3] B65H *3/64*
U.S. Cl. 271—112 5 Claims

1. In a sheet feeding apparatus comprising a sheet receptacle for placing sheets thereon, a vacuum plate which is disposed above said sheet receptacle and which has a sheet suction hole in a bottom portion thereof directed to said sheet receptacle, a casing for covering said vacuum plate, a fan for bringing a space between said vacuum plate and said sheet receptacle to a negative pressure by sucking air from said casing, a sheet feed roller, which is disposed rotatably in said casing and a sheet transport portion which is exposed to the side of said sheet receptacle through said vacuum plate, a sheet separating roller which is rotatably disposed, downstream of said sheet feed roller, in sheet transport path, and a drive apparatus for driving each of said rollers in the sheet feeding direction, the improvement wherein said sheet separating roller is disposed in said casing and part of the peripheral surface of said sheet separating roller is exposed to the side of the said sheet receptacle through said vacuum plate and in contact with a frictional member disposed below said sheet separating roller.

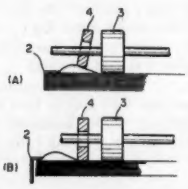


4,268,026

SHEET SUPPLY MEANS FOR A REPRODUCING APPARATUS

Kenji Kojima, Tokyo, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Jul. 25, 1979, Ser. No. 60,421
Claims priority, application Japan, Aug. 2, 1978, 53-105538[U]
Int. Cl.[3] B65H *3/06, 3/46*
U.S. Cl. 271—121 1 Claim



1. In a sheet supply device for a cassette-type reproducing apparatus having at least one cassette for housing a stack of copy sheets, the combination comprising:

at least one rotatable sheet supply roller mounted on a shaft and disposed for contact with the copy sheets housed in said cassette for feeding said sheets in a forward manner one sheet at a time;

at least one corner pawl mounted on said cassette and disposed to engage an edge portion of a copy sheet so as to cause, in cooperation with said sheet supply roller, an upward buckling of a top sheet of said stack at a point between said sheet supply roller and said pawl; and

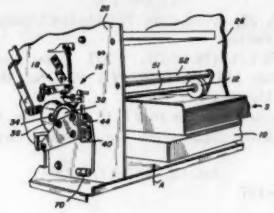
at least one guide roller mounted on said shaft between said sheet supply roller and said pawl, said guide roller having a central aperture which has a larger diameter than said shaft so that said guide roller is loosely mounted on said shaft so as to be movable in a generally radial direction relative to the axis of said shaft and so as to rotatably contact the copy sheets under its dead weight.

4,268,027

SHEET FEEDING APPARATUS

Richard L. Oleksiak, Lincolnwood, and George P. Niesen, Mt. Prospect, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.

Filed Oct. 22, 1979, Ser. No. 87,209
Int. Cl.[3] B65H 1/12
U.S. Cl. 271—153 5 Claims



5. In a duplicating machine including a table movable between raised and lowered positions for supporting a stack of paper sheets having a top portion with an uppermost sheet, a feed member for engaging the uppermost sheet of the stack in a feed zone, means for driving the feed member to feed sheets from the feed zone into the duplicating machine, biasing means coupled to said table for continuously urging the table toward its raised position, and improved means for automatically raising the table so as to maintain the top portion of the stack in the feed zone, the improvment comprising:

(a) a pawl and ratchet mechanism, the ratchet being coupled to and moving in direct relationship with the movement of the table, said biasing means continuously urging the movement of said ratchet relative to said pawl;

(b) clutch means for disengaging the ratchet from said table whenever the table is moved away from the feed zone;

(c) selectively operable pendulum means connected to said pawl for actuating said pawl to release said ratchet and permit the table to move upwardly, and

(d) sensor means coupled to said pendulum means and responsive to the top portion of the stack being lowered to a predetermined level to enabling operation of said pendulum and disabling said pendulum upon raising of the top portion of the stack to another higher predetermined level.

4,268,028

AUTOMATIC SHEET HANDLING APPARATUS

Merrill D. Martin, No. 2 Mall Ct., Oakland, Calif. 94611

Continuation-in-part of Ser. No. 860,886, Dec. 15, 1977, abandoned, which is a division of Ser. No. 771,845, Feb. 26, 1977, Pat. No. 4,099,712. This application Oct. 17, 1979, Ser. No. 85,808
Int. Cl.[3] B65H 29/50, 31/38
U.S. Cl. 271—201 11 Claims

3. An undulating stack aligner for the stacker end of a stacker conveyor, comprising

a flexible element along said stacker end,

a plurality of individual support elements along said flexible element floatingly to support said element with freedom of flexing sequentially from one end to the other end,

a plurality of sequential flexing means spaced apart along said flexible element and between the ends of said element to flex said flexible element sequentially from one end to the other end along said stacker end so as to align sheets in a stack as it is stacked at said end of said conveyor,

and actuating means adjacent said flexing means between the ends of said flexible element to individually sequentially actuate the respective flexing means.

11. The combination with the stacker end of a stacker conveyor, having

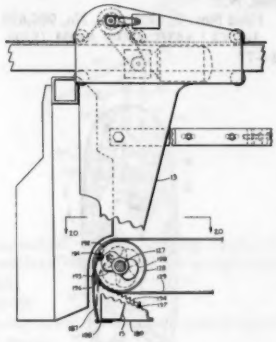
a pair of brackets pivoted on opposite sides of said stacker end,

back-stops,

adjustable supports to support said back-stops spaced from said stacker end for stacking sheets discharged therefrom, of

a connecting brace extending from each bracket and being pivoted on the respective side of said conveyor,

the pivot of each bracket being located to swing the bracket toward said conveyor when forced by said back-stops,



relatively telescopingly held rods forming each connecting brace,

resiliently yieldable means to hold said rods extended and resist the turning of said brackets toward said conveyor,

a switch mounted on one of said rods,

a member on the other rod for actuating said switch when an obstruction to movement of said back-stops pivots said brackets toward said conveyor thereby telescoping said rods,

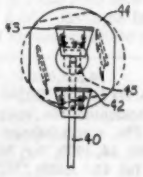
and means actuated by the actuation of said switch to raise and hold said back-stops above said obstruction.

4,268,029

RECREATIONAL BASKETBALL APPARATUS WITH MULTIPLE MOVING GOALS

Andrew P. Collins, 3926 Dover Rd., Durham, N.C. 27705

Division of Ser. No. 829,987, Sep. 1, 1977, Pat. No. 4,202,543. This application Feb. 11, 1980, Ser. No. 120,724
Int. Cl.[3] A63J 3/00; A63B 63/06
U.S. Cl. 272—3 1 Claim



1. A commercial basketball recreational facility comprising:

(a) an array of basketball courts grouped in spaced-apart sets on a common land area, each set of courts having a plural number of courts and each court having a goal-backboard support means and appropriate fencing shared with adjacent courts on either side thereof; and

(b) a set of elevated unique goal-backboard structures for the array of courts with one such unique structure being supported in each court on each said support means at an elevation appropriate to the game of basketball and including among the set of said unique goal-backboard

structures at least one such unique goal-backboard structure having a single vertical backboard mounting a pair of spaced parallel conventional basketball goals on the same outer playing side thereof and means to rotate said single backboard about a horizontal axis perpendicular thereto and passing through said single backboard between said spaced apart goals.

4,268,030

INFLATABLE ACTION TOY

Lawrence Richards, Glen Cove, N.Y., assignor to GLJ Toy Co., Inc., Syosset, N.Y.

Filed Nov. 1, 1978, Ser. No. 956,659

Int. Cl.³ A63B *69/34;* A63H *15/06*

U.S. Cl. 272—77 **4 Claims**

1. An inflatable article comprising first and second panels made substantially of flexible sheet material and sealingly joined to each other at their respective peripheral edges to form a substantially sealed enclosure capable of retaining gas under pressure, said first and second panels having respective first and second panel portions spaced from each other when said enclosure is internally gas pressurized, said first panel portion being transparent to cause said second panel portion to be visible therethrough, said first panel portion being partially imprinted with a first image to permit continued visibility of said second panel portion, a second image being imprinted on said second panel portion, and an intermediate panel between said first and second panels, said intermediate panel being spaced from said first and second panels when said enclosure is internally gas pressurized, said intermediate panel having a transparent panel portion imprinted with a third image to permit continued visibility of said second image therethrough and through said first panel portion, said first, second and third images cooperating with each other to produce an illusion of three dimensions and an image which continuously changes with different angles of observation of the inflatable article.

4,268,031

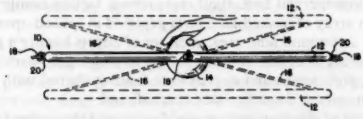
PLAY AND EXERCISING DEVICE

Fay G. Schomburg, Bradenton, Fla., assignor to Anthony Dama, Bradenton Beach, Fla., a part interest

Filed Jul. 24, 1979, Ser. No. 60,136

Int. Cl.³ A63B *21/14*

U.S. Cl. 272—128 **3 Claims**



1. A play and exercising device comprising an annular member, a manually graspable spherical member disposed substantially at the center of said annular member, and at least two pairs of elastic stretched strings radially connecting said annular member to said spherical member, wherein each pair of said strings is a single length of elastic line passed freely through diametrical apertures in said spherical member, the ends of said line being attached to said annular member at diametrically opposed points.

4,268,032

EXPANDER

Antoine Cusi, 35, Avenue du Bois-de-la-Chapelle, CH-1213 Onex, Switzerland

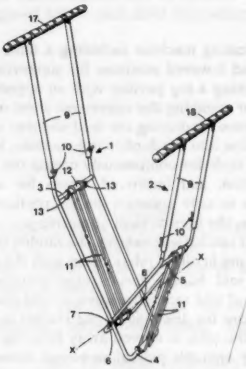
PCT No. PCT/CH78/00025, § 371 Date Jun. 5, 1979, § 102(e) Date May 22, 1979, PCT Pub. No. WO79/00181, PCT Pub. Date Apr. 19, 1979.

This PCT application filed Jun. 1, 1979, Ser. No. 109,455

Claims priority, application Switzerland, Oct. 5, 1977, 12187/77

Int. Cl.³ A63B *21/02*

U.S. Cl. 272—137 **3 Claims**



1. An expander for physical exercises, comprising in substantially symmetrical combination:

a pair of substantially U-shaped actuating arms, each of said arms having a pair of branches connected together at one end forming a U member, said U members forming a first pair of transoms, said arms pivotally articulated together along an axis at right angles to the lengthwise direction of the arms near said transoms;

a second pair of transoms connecting the branches of said arms at right angles at a location opposite said first pair of transoms with respect to said articulation axis, said U-shaped branches being bent inwardly at an obtuse angle near or at the place of said second pair of transoms, the remaining ends of the branches of each arm being connected together by a handle; and

resilient means connecting each transom of said first pair of transoms to a transom of said second pair of transoms, whereby said arms are biased away from each other.

4,268,033

CUE BALL AIMING DEVICE

Paul E. Fontaine, 9411 Railton, Houston, Tex. 77080

Filed Apr. 7, 1980, Ser. No. 137,843

Int. Cl.³ A63D *15/00*

U.S. Cl. 273—2 **9 Claims**

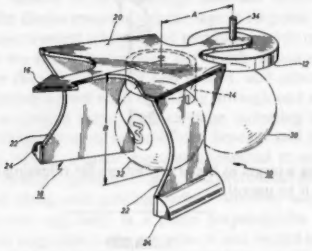
1. A cue ball aiming device, for aiming a cue ball with respect to an object ball, comprising:

a support structure adapted to rest on the playing surface of a billiard table and generally over an object ball, said support structure having at least two openings therein, the first of which openings being large enough to permit a cue ball to strike an object ball resting generally within the

support structure and the second of which openings being large enough to permit the object ball to be projected out of said support structure;

a cue ball spotter for providing a means for aiming a cue ball, said cue ball spotter being affixed to the support structure at the end thereof nearer the first opening;

an object ball cradle against which an object ball may rest, to enable the proper positioning of support structure relative to an object ball and for providing an unobstructed path for the projection of an object ball through the second opening, said object ball cradle being affixed to and positioned within said support structure so that the distance between the centerline of the cue ball spotter and the centerline of an object ball when it is abutting said object ball cradle is equal to the diameter of a billiard ball; and



a center-to-center sight for properly aligning the support structure, said center-to-center sight being affixed to the support structure and connected so that an imaginary line extending horizontally from the center of said sight intersects both of the imaginary centerlines extending vertically upward through the center of an object ball when it is properly positioned under the support structure and through the center of the cue ball spotter.

4,268,034

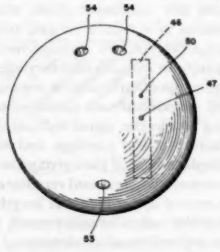
BOWLING BALL

Gene W. MacDonald, Kent, Ohio, assignor to GMSG, Inc., Kent, Ohio

Continuation-in-part of Ser. No. 814,625, Jul. 11, 1977, abandoned, which is a continuation of Ser. No. 605,388, Aug. 18, 1975, abandoned. This application Mar. 12, 1979, Ser. No. 19,823

Int. Cl.³ A63B *37/14*

U.S. Cl. 273—63 C **4 Claims**



1. A bowling ball comprising a spherical mass, a weight block having a higher specific gravity than said mass embedded in said mass, said weight block having a longitudinal axis, and means connected to said weight block and appearing on the outside surface of said mass to identify the location of the longitudinal axis of said weight block and to determine the depth of said weight block in said mass.

4,268,035

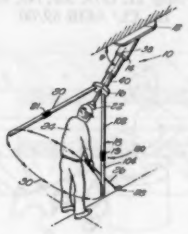
TRANSVERSE FORCE INDICATING DEVICE FOR SWING TEACHING

Jess Oppenheimer, 540 Moreno Ave., Los Angeles, Calif. 90049

Continuation-in-part of Ser. No. 10,554, Feb. 9, 1979, Pat. No. 4,211,418. This application Mar. 25, 1980, Ser. No. 133,941

Int. Cl.³ A63B *69/36*

U.S. Cl. 273—186 A **7 Claims**



1. An unattached swing teaching apparatus rotatable through a predefined arcuate path, the swing teaching apparatus comprising:

support means;

rotating means rotatably attached to and supported by the support means;

guide rod means fixed for rotating with the rotating means;

a generally rod-like object for being swung, the guide rod means positioned for being intermittently contacted and rotated by the object as the object is swung for guiding the object through the predefined arcuate path; and

means for indicating the amount of transverse force exerted by the object against the guide rod means when the object is swung in contacting relationship with the guide rod means.

4,268,036

SHOOTING GAME APPARATUS

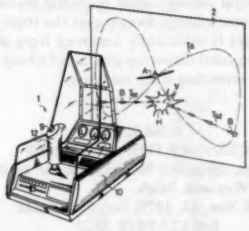
Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Company Limited, Kyoto, Japan

Filed Mar. 26, 1979, Ser. No. 23,893

Claims priority, application Japan, Apr. 20, 1978, 53-047325; Apr. 20, 1978, 53-047326; Apr. 29, 1978, 53-051869; Apr. 29, 1978, 53-059077[U]

Int. Cl.³ A63F *9/02*

U.S. Cl. 273—316 **3 Claims**



1. A bullet image projecting device comprising:

a housing;

a light source disposed in said housing;

a pair of bullet image forming units placed at generally opposing sides of said light source in a symmetrical fashion, each unit including a bullet slit, a mirror and a lense, said unit being rotatable around said light source in said housing, and a means for rotating said unit cojointly around said light source, whereby a pair of bullet image

are projected and moved on a screen in a symmetrical fashion.

4,268,037

TRAINING DEVICE FOR DEVELOPING ROPING SKILLS

Victor W. McKinley, and Fred D. McKinley, both of R.R. 1, Box 850A, Willcox, Ariz. 85643

Filed May 21, 1979, Ser. No. 41,005
Int. Cl.³ A63B *69/00*
U.S. Cl. 273—359 **6 Claims**

1. A foot mounted training device having a target for developing roping skills, said device being mountable upon and solely supported by one of the trainee's feet to locate the target at a sufficient distance to prevent interference of a thrown loop of the rope with the trainee's leg, said device comprising in combination:

(a) a simulated steer head;

(b) simulated horns extending in opposed lateral directions from said head and serving as the target about which the thrown loop of the rope is to fall and be drawn tight by the trainee;

(c) an elongated neck portion extending from said head and including a terminal end, said neck portion and said head being in combination of sufficient fore and aft length to define a distance from the base of said horns to said terminal end greater than one half of the span of said horns and thus also greater than the radius of the thrown loop which is necessary for the thrown loop to fall past said horns;

(d) a cavity extending into said neck portion from said terminal end for receiving the toes and ball of the trainee's foot; and

(e) strap means extending rearwardly from said neck portion for strapping said head and said neck portion to the trainee's foot to maintain the trainee's toe and ball of the foot within said cavity during vigorous vertical and horizontal movement of the trainee's foot, said strap means in combination with said cavity providing the sole support for maintaining said roping target upon the trainee's foot to leave the trainee's hands free to cast the rope;

whereby, the target is sufficiently removed from the trainee's leg to permit unimpeded throwing and fall of a loop of the rope about said horns extending from said head.

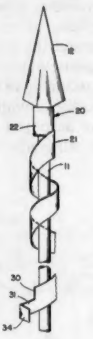
4,268,038

ACCESSORY FOR AN ARROW

Allen J. Wierenga, Hopkins, Mich., assignor to Philip A.D. Machine, Inc., Wayland, Mich.

Filed Nov. 13, 1979, Ser. No. 93,632
Int. Cl.³ F41B *5/02*
U.S. Cl. 273—416 **12 Claims**

11. In combination an arrow having a head and shaft threadedly joined thereto at the base of the head, the threaded joint between said head and shaft forming a shoulder at the forward end of the shaft; a shell having an internal opening of a size to receive and seat closely about said shaft; said shell having a radially inwardly extending flange at its forward end seated on said shoulder and clamped between said shoulder and the base of said head; a coil of ribbon-like resilient material tightly wound about said shell and having one end secured thereto; releasable means holding said material in said coiled condition; a releasable catch projecting outwardly from said coil for



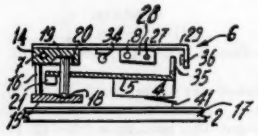
engaging a target as the arrow enters for releasing the strip and freeing it to uncoil.

4,268,039

TANGENTIAL PICK-UP DEVICE FOR A GRAMOPHONE TURN-TABLE

Daniel Bois, Chouilly, Geneva, Switzerland (CH-1242), and Jan Olsfors, Route de Divonne, 18, Nyon, Vaud, Switzerland (CH-1260)

Continuation of Ser. No. 788,890, Apr. 19, 1977, Pat. No. 4,149,730. This application Apr. 16, 1979, Ser. No. 30,560
Claims priority, application Switzerland, Apr. 27, 1976, 5264/76
The portion of the term of this patent subsequent to Aug. 17, 1996, has been disclaimed.
Int. Cl.³ G11B *3/38*
U.S. Cl. 369—220 **4 Claims**



1. In a pick-up device for a phonograph record turntable comprising a tangentially moving tone arm including a mounting block, at least one rectilinear guide member extending parallel to the radius of a record on said turntable, a servomotor in said mounting block, a carriage movable along said guide member, a support beneath said carriage, a pick-up head at one end of said support, articulation means connecting the other end of said support to said carriage, a device on said carriage supplying an electric signal indicating the position of said support relative to said carriage and said servo-motor controlling the displacement of the carriage in response to said signal, the improvement wherein said rectilinear guide member extends over the record upper face, the length of said support being shorter than the radius of said record, said articulation means comprises a pivot member connected to said support and having a conical point at its lower end, a plate member connected to said carriage and having an enlarged conical seat in which said conical point engages said pivot member extending through said support, a guide member connected to said carriage and including a guiding surface, said pivot member sliding at its upper end along said guiding surface whereby said pivot member may move angularly in a plane perpendicular to the surface of and tangential to the grooves of said record and

also rotate around its axis which is substantially perpendicular to the plane of the record, said guide member located further away from the surface of the record than said conical point of said pivot member.

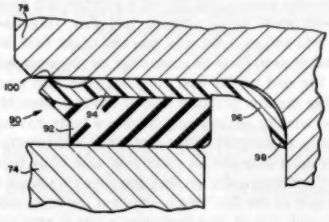
3. In a pick-up device for a phonograph record turntable comprising a tangentially moving tone arm including a mounting block, at least one rectilinear guide member extending parallel to the radius of a record on said turntable, a servo-motor in said mounting block, a carriage movable along said guide member, a support beneath said carriage, a pick-up head at one end of said support, articulation means connecting the other end of said support to said carriage, a device on said carriage supplying an electric signal indicating the position of said support relative to said carriage and said servo-motor controlling the displacement of the carriage in response to said signal, the improvement wherein said rectilinear guide member extends over the record upper face, the length of said support being shorter than the radius of said record, said articulation means comprising a pivot shaft extending through said support and having a conical point, said carriage including a plate having an enlarged conical seat disposed beneath said support close to said record, a guide member connected to said carriage and including a guiding surface, said pivot shaft sliding at its upper end along said guiding surface whereby said pivot shaft may move angularly in a plane perpendicular to the surface of and tangential to the grooves of said record and also to rotate around its axis which is substantially perpendicular to the plane of the record, said guide member located further away from the surface of the record than said conical point of said pivot shaft.

4,268,040

THRUST WASHER AND COMBINATION SEAL AND THRUST WASHER METHOD AND APPARATUS

Dean R. Bainard, Bethel Township, York County, S.C., and Martin E. Benjamin, Gastonia, N.C., assignors to Garlock Inc., Longview, Tex.

Division of Ser. No. 733,890, Oct. 19, 1976, Pat. No. 4,166,627.
This application Feb. 12, 1979, Ser. No. 11,775
Int. Cl.³ F16J *15/34, 15/32;* F16C *33/20*
U.S. Cl. 277—1 **25 Claims**



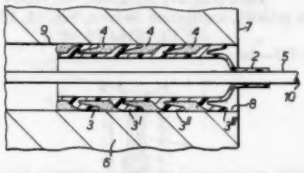
1. An article comprising a thrust washer including a flat, radially extending, ring-shaped member having a pair of radial contact surfaces, said member comprising a backing layer of resilient elastomeric material forming one of said radial contact surfaces, bonded to a bearing layer made of a low coefficient of friction material forming the other of said radial contact surfaces, said bearing layer extending substantially the entire radial dimension of said backing layer and including a sealing lip at both its I.D. and O.D. edge.

4,268,041

SEALING DEVICE AND METHOD

Richard C. Sovish, Waterloo, and Marc F. L. Moisson, Strombeek-Bever, both of Belgium, assignors to N.V. Raychem S.A., Kessel-Lo, Belgium

Division of Ser. No. 847,823, Nov. 21, 1977, Pat. No. 4,194,750.
This application Oct. 15, 1979, Ser. No. 84,658
Claims priority, application United Kingdom, Nov. 31, 1976, 45725/76
Int. Cl.³ F16J *15/10, 15/32*
U.S. Cl. 277—1 **19 Claims**



1. A method of forming a seal between the outer surface of an elongated article and the internal walls of a duct through which the article passes, comprising the steps of

(a) selecting a sealing device comprising a hollow body member made of a polymeric material and provided on its external surface with a plurality of spaced apart flanges, such flanges having a peripheral region remote from the surface that is substantially rigid at the maximum temperature likely to be encountered in use of the device and deformable only at elevated temperatures greater than said maximum temperature, wherein at least part of the outer surface of the hollow body member has sealant thereon, the diameter of the flanges being greater than the inner diameter of the duct;

(b) heating at least the outer peripheral regions of the flanges to a sufficiently high temperature to make them deformable;

(c) inserting the sealing device with the heated flanges into the duct at least to the extent that a plurality of flanges is received by the duct whereby the outer portions of the flanges are deformed by the duct;

(d) allowing the device to cool; and

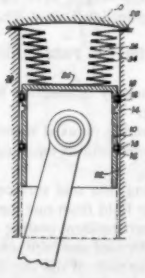
(e) forming a seal between the hollow body member and the article.

4,268,042

FLEXIBLE BELLOWS PISTON SEAL

Albert G. Borlan, 3730 Ginger Way, Oceanside, Calif. 92054

Filed May 8, 1980, Ser. No. 147,926
Int. Cl.³ F16J *3/00*
U.S. Cl. 277—1 **7 Claims**



1. A piston and cylinder comprising:

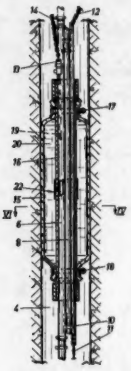
(a) a piston having a plurality of circumferential slots;
(b) a plurality of bearings seated in said slots to bear on said cylinder; and
(c) a continuous accordion baffle being expansible and contractable longitudinally in said cylinder and defining an expansion chamber with the head of said cylinder.

4,268,043

SEALING MEMBER FOR USE IN WELL SHAFTS

Bror I. Forssell, Göteborg, Sweden, assignor to RP Rorprodukter AB, Göteborg, Sweden

Filed Aug. 27, 1979, Ser. No. 70,324
Claims priority, application Sweden, Sep. 15, 1978, 7809715
Int. Cl.³ F16J *15/48*
U.S. Cl. 277—34 **5 Claims**



1. An improved sealing member intended for insertion in a well shaft and comprising a hose, a tube sleeve, said hose being mounted over said tube sleeve and having its ends sealed relative to said sleeve, and at least one pipe carrying pressurized water, said pipe passing through said sleeve, the improvement comprising

a space formed between said sleeve and said hose, said space being connected with said pressurized water pipe, a valve provided in said connection and capable of allowing water to flow from said pipe to said space but not in the reverse direction.

4,268,044

FLUID CONNECTIONS TO ROTARY MEMBERS

Daniel L. Killian, and Peter E. Fraser, both of Leamington Spa, England, assignors to Automotive Products Limited, Leamington Spa, England

Continuation of Ser. No. 853,524, Nov. 21, 1977, abandoned. This application May 7, 1979, Ser. No. 36,810
Claims priority, application United Kingdom, Nov. 25, 1976, 49215/76
Int. Cl.³ F16J *15/00*
U.S. Cl. 277—59 **3 Claims**

1. A rotary fluid supply connection in a power hydraulic apparatus comprising:

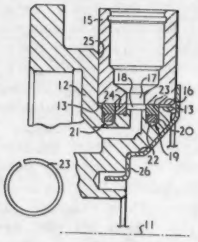
two relatively rotatable co-axial members having opposed cylindrical surfaces defining an annular chamber therebetween;

passageways opening into said surfaces for the continuous flow of hydraulic fluid from one member to the other;

a pair of spaced apart resilient sealing rings acting between the surfaces and located one each side of the fluid passageways to define the ends of the annular chamber;

two annular grooves in the rotary member in each of which a sealing ring is located, and there is a clearance in each groove radially inwards of the respective sealing ring to ensure that full bearing loads cannot be transmitted between the co-axial members through the sealing rings; and

a bearing ring, wherein the bearing ring is located between the fluid passageways and one of the sealing rings and is



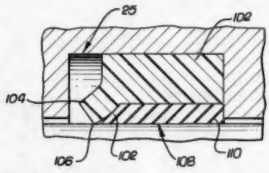
located on a reduced diameter portion of the rotary member that interconnects with one axial side of a groove housing a sealing ring, said bearing ring restraining radial movement between the two members and being made of the same plastics bearing material as the sealing rings.

4,268,045

SEAL ASSEMBLY

Henry A. Traub, Pacific Palisades, Calif., assignor to W. S. Shamban & Co., Santa Monica, Calif.

Continuation-in-part of Ser. No. 32,525, Apr. 23, 1979, Pat. No. 4,231,578. This application Jun. 16, 1980, Ser. No. 159,644
Int. Cl.³ F16J *15/24, 15/32*
U.S. Cl. 277—121 **4 Claims**



1. A seal assembly having a low pressure side and a high pressure side, comprising:

a first annular sealing ring having a substantially rectangular cross-sectional configuration, said first ring having an inner side and an outer side, one end of the first ring being tapered so as to form an acute edge on the inner side of the ring, the end of the first ring opposite said acute edge defining the low pressure side of the seal assembly; and

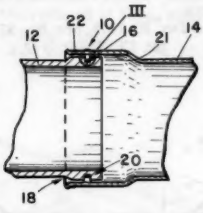
a second annular sealing ring having a body having a substantially rectangular cross-sectional configuration defining an inner side and an outer side, said body being positioned concentrically around the first ring such that the outer side of the first ring is adjacent the inner side of the body, said second ring including a wiper arm which extends radially inwardly from an end of the inner surface of the body, said wiper arm including a sloped surface which extends toward the high pressure side of said assembly and abuts the tapered end of the first ring, said wiper arm including an outermost corner at the end of the sloped surface which extends slightly beyond the acute edgeof the first ring, wherein substantially all of the sloped surface engages the tapered end of the first ring, thereby preventing substantial deformation of said corner during operation of the sealing assembly.

4,268,046

MULTIPLE SEAL STATIONARY SEALING RING

Kenneth J. Nisper, Muskegon, Mich., assignor to Muskegon Piston Ring Company, Muskegon, Mich.

Filed Feb. 23, 1979, Ser. No. 14,737
Int. Cl.[3] F16J 9/06; F16L 21/02
U.S. Cl. 277—139 18 Claims



1. A high temperature multiple seal stationary sealing ring adapted to form a seal between a carrier and a circular housing; the carrier including a ring groove having an upper side, a lower side and a bottom, said sealing ring being disposable within said groove and comprising:

a plurality of stacked, annular, parted ring segments dimensioned to slip within the carrier groove, each segment having an outer face and an inner face; and

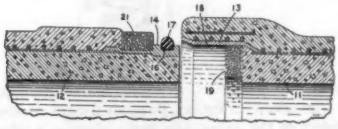
a circumferential expander means for exerting a radial force on the inner face of each of said segments, said expander means being configured to be spaced from the groove bottom at the operating temperature of the carrier and housing, said segments and said expander means being fabricated from a high temperature alloy which maintains its mechanical properties in the temperature range of 300° F. to 1600° F. and said radial force increasing as temperature increases to said operating temperature.

4,268,047

UNDERGROUND PIPE JOINT WITH HYDRATABLE CEMENT IN POLYURETHANE GASKET

Irving Tashlick, Bradley Beach, N.J., assignor to Interpace Corporation, Parsippany, N.J.

Continuation-in-part of Ser. No. 536,239, Dec. 24, 1974, abandoned, which is a division of Ser. No. 462,041, Apr. 18, 1974, Pat. No. 3,923,311. This application Nov. 27, 1978, Ser. No. 963,746
The portion of the term of this patent subsequent to Dec. 2, 1992, has been disclaimed.
Int. Cl.[3] F16J 15/10, 15/38
U.S. Cl. 277—207 A 2 Claims



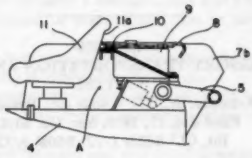
1. A joint for a pipe made of concrete and having a bell and a spigot, the joint comprising a band positionable between the spigot and the bell, the band engageable in the joint by inserting the spigot into the bell, and the band being made of a porous cellular polyurethane foam material having cell walls and providing sponginess and with a hydratable cement dispersed in the cell walls whereby the cement stays in position and on absorption of water by the band the cement hydrates.

4,268,048

FUEL TANK MOUNTING STRUCTURE FOR A TRACTOR

Akira Teraoka, Takaishi, and Mitsugu Nakada, Sakai, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Sep. 24, 1979, Ser. No. 78,408
Claims priority, application Japan, Dec. 18, 1978, 53/175630
Int. Cl.[3] B60N 1/00; B60R 11/00
U.S. Cl. 280—5 A 3 Claims



1. In a fuel tank mounting structure for a tractor, comprising:

a transmission case;

left and right fenders for rear wheels disposed at lateral sides of said transmission case;

a seat disposed on said transmission case, a space being defined above said transmission case and rearwardly of said seat and between said left and right fenders; and

a fuel tank disposed within said space and attached to said transmission case;

the improvement comprising:

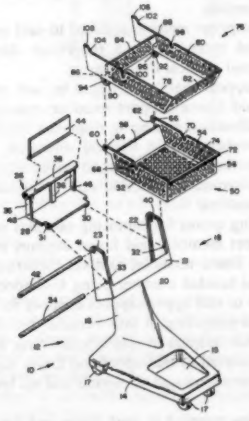
a plate-like table disposed upwardly of said fuel tank and secured at left and right end portions thereof to upper portions of said left and right fenders.

4,268,049

SHOPPING CART

Thomas R. Salvador, 204 C St., South San Francisco, Calif. 94080

Filed Feb. 1, 1979, Ser. No. 8,592
Int. Cl.[3] B62B 3/02
U.S. Cl. 280—33.99 H 12 Claims



1. In a shopping cart having a ground engaging base and a support extending therefrom, the improvement comprising:

a carrying means including a basket having sidewalls and a bottom wall defining a carrying space adapted for carrying goods;

means for pivotally mounting the basket to the support about an axis;

a wall structure having sidewalls defining another space; and

means for pivotally mounting the wall structure to the support such that the wall structure and the basket can be selectively pivoted about said axis to a position wherein the sidewalls of the wall structure form extensions of the sidewalls of the basket whereby the cooperate to define a combined space, which is larger than the carrying space of said basket.

4,268,050

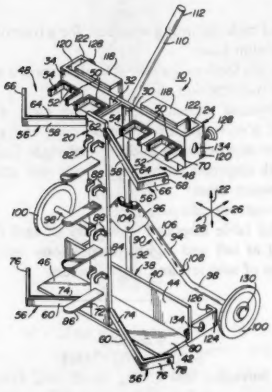
SKI ACCESSORY TRANSPORTATION AND STORAGE SYSTEM

Richard B. Kennedy, Sr., 771 Woods Rd., Pasadena, Md. 21122

Filed Jul. 27, 1979, Ser. No. 61,420

Int. Cl.³ B62B *1/12*; B60R *9/12*

U.S. Cl. 280—38 **11 Claims**



1. A ski accessory transportation and storage system for transportation and storage of skis and ski paraphernalia, comprising:

(a) a central frame member extending substantially in a vertical direction;

(b) an upper support member secured to said central frame member and extending in a transverse direction with respect to said vertical direction;

(c) a lower support member secured to said central frame member, said lower support member extending in said transverse direction and being displaced from said upper support member in said vertical direction, said lower support member being L-shaped in contour having a vertically directed leg section and a longitudinally directed leg section;

(d) ski capturing means for capturing said skis between said upper support member, said lower support member and said central frame member, said ski capturing means including a ski bracket member being U-shaped in contour and secured to said upper support member for insert of at least one ski extending in said vertical direction and ski locking means coupled to said central frame member and releasably coupled to said upper and lower support members for constraining said ski within said ski bracket member; and,

(e) wheel means coupled to said upper and lower support members for rolling displacement of said ski accessory transportation and storage system, said ski locking means including an upper ski locking bar member rotationally coupled to said central frame member and lockingly engageable to one end of said upper support member and a lower ski locking bar member rotationally coupled to said central frame member and lockingly engageable to one end of said lower support member.

4,268,051

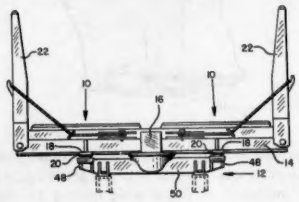
LOG BUNK STRUCTURES

Paul G. Skirvin; Walter W. Skirvin, and Carl L. Skirvin, all of Philomath, Oreg., assignors to Enoch Skirvin & Sons, Inc., Philomath, Oreg.

Filed Jan. 20, 1978, Ser. No. 871,152

Int. Cl.³ B60P *7/12*

U.S. Cl. 280—145 **6 Claims**



1. In a trailer vehicle,

elongated supporting members extending longitudinally thereof and in the general direction of travel,

a crossframe including a crossframe member rigidly secured to the longitudinal members and a pair of bearing members,

the bearing members having cutout portions,

and a log bunk pivotal on the crossframe member and having guide shoes at the ends thereof,

and a pair of roller inserts at the ends of the crossframe member,

each roller insert including a box-like frame fitting into one of the cut-out portions and welded to the bearing members and an end of the crossframe member and also including a plurality of rollers.

4,268,052

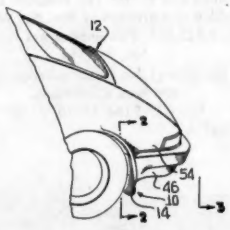
MUD FLAP ASSEMBLY

James L. Sullivan, 15 Parkdale Dr., Farmingdale, N.Y. 11735

Filed Dec. 27, 1979, Ser. No. 107,737

Int. Cl.³ B62D *25/16*

U.S. Cl. 280—153 R **6 Claims**



1. A mud flap assembly for installation on an automobile having a trim screw extending through flanges of lower and upper fenders of the automobile body adjacent a wheel well and a brace extending between the automobile frame and the lower fender, the mud flap assembly comprising

a flap member having an inner edge and a top outer corner;

bracket means mounted on said flap member adjacent said top outer corner having a hole therein for receiving the trim screw to mount said flap member on the lower fender of the vehicle; and

clamp means mounted on said flap member adjacent said inner edge including strap means for extending around the brace of the automobile to mount said flap member

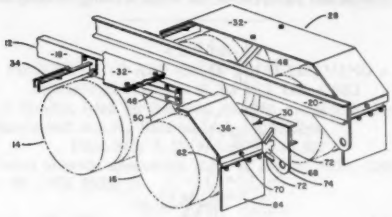
thereon whereby said mud flap assembly can be installed on the automobile without drilling holes in the automobile body.

4,268,053

WHEEL FENDER ASSEMBLY

Charles R. Toppins, Knoxville; Cecil L. Williams, Concord, and Otto H. Korth, Maryville, all of Tenn., assignors to Dempster Systems Inc., Knoxville, Tenn.

Filed Aug. 27, 1979, Ser. No. 69,685
Int. Cl.³ B62D *25/16*
U.S. Cl. 280—154 **2 Claims**



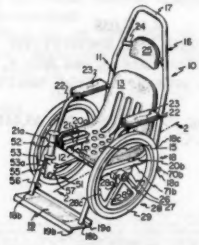
1. A fender assembly for mounting on the frame of a wheeled vehicle comprising:
an intermediate flat rigid portion,
lateral downwardly sloping portions positioned at each end of the intermediate portion,
a connector suspended from the vehicle frame to engage the intermediate portion,
means to secure said connector at one location on the intermediate portion,
support brackets connected to the frame adjacent to said lateral portions,
a pivot bolt connecting each lateral portion to a support bracket to allow pivoting movement of said lateral portions relative to the vehicle frame.

4,268,054

CHILD TRANSPORT VEHICLE

Brent L. Twitchell, 3451 W. 4400 So., Granger, Utah 84120, and Kendel S. Twitchell, 1569 Shenandoah Cir., Murray, Utah 84107

Filed Jun. 27, 1979, Ser. No. 48,823
Int. Cl.³ B62M *1/14*
U.S. Cl. 280—242 WC **12 Claims**



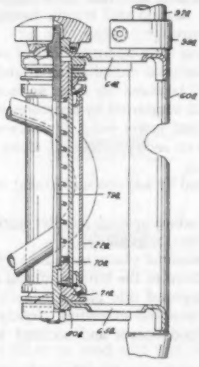
1. A child transport vehicle comprising,
a frame formed from a single section of material defining spaced apart side frames and a hand grip area thereabove and includes separate cross piece members secured to and spanning between said side frames, and further includes a step arranged between ends of said single section of material;
a contoured chair means that includes seat and back portions supported between said side frames for supporting a person therein;
a pair of relatively large wheels mounting air inflatable tires thereon and journaled to an axle secured between said side frames;
brake means for simultaneously engaging both large wheels, where said step is axially coupled between frame ends to pivot therearound, comprising,
a bell crank that is pivotally connected to a frame side, above said step and includes a handle means that extends therefrom convenient for manual operation to pivot said bell crank;
rod means pivotally coupled to said step and said bell crank for translating movement therebetween;
a brake axle journaled to said frame such that turning thereof brings dogleg ends thereof into engagement with said air inflated tires;
means arranged between said bell crank and said brake axle such that pivoting of bell crank is translated into turning of said brake axle; and
a caster wheel assembly means secured to and extending from said frame for providing a third point of ground contact.

4,268,055

BICYCLE FORK ASSEMBLY

Theodore F. Bell, 400 Fentress Blvd., Daytona Beach, Fla. 32015

Division of Ser. No. 664,238, Mar. 5, 1976, Pat. No. 4,129,317.
This application Oct. 4, 1978, Ser. No. 948,330
Int. Cl.³ B62K *15/00*
U.S. Cl. 280—278 **7 Claims**



1. For use in removably mounting a pair of bicycle fork tubes having longitudinally extending upper and lower brackets on a fork mounting tube of a bicycle frame, a fork assembly comprising
an inner tube,
means for rotatably mounting the inner tube within the fork mounting tube,
a rod extending through said inner tube,
said brackets having rearwardly extending slots through which the rod may pass to engage the fork assembly,
a lower spool on said rod adapted to engage the under side of said lower bracket,
an upper spool on said rod adapted to engage the under side of said upper bracket,
said spools being movable longitudinally with said rod within said inner tube,
spring means within said inner tube yieldingly urging said spools into engagement with said brackets,
and locking means on the upper end of said rod and movable longitudinally of said rod such that when said locking means is moved longitudinally relative to said rod toward

the upper surface of said upper bracket, said fork assembly is locked on said brackets, and when said locking means is moved longitudinally relative to said rod away from said upper bracket, said fork assembly can be removed by moving said rod and said spools longitudinally downwardly against the action of said spring means disengaging said spools from said brackets so that said fork assembly can be removed by transverse movement through said slots.

4,268,056

STRUCTURE FOR ATTACHING HITCH TO TRACTOR

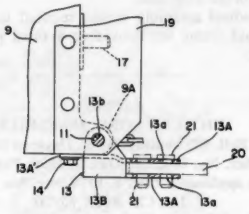
Junji Miyata, Koaza-Yakimachi, and Kazuaki Kurohara, Sakai, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Aug. 15, 1979, Ser. No. 66,744

Claims priority, application Japan, Aug. 29, 1978, 53-119434[U]

Int. Cl.[3] **A01B** *59/042;* **B60D** *1/14*

U.S. Cl. 280—456 A **3 Claims**



1. A hitch attaching structure for a tractor comprising:

a transmission case on said tractor having a bottom and a lower rear part;

bosses projecting from opposite sides of said lower rear part of said transmission including inner and outer surfaces;

a recess formed between the inner surfaces of said bosses.

a transverse rod supported by apertures in said bosses;

a pair of opposed lower links pivotally supported by said rod, one link on each end thereof, along the outer surfaces of said bosses;

a hitch supported by said rod within said recess between said bosses;

said hitch including spaced parallel horizontal plates and opposed vertical side plates;

one of said horizontal plates including a forward extension which is secured to the bottom of said transmission;

each of said opposed side plates including a hole in their forward portion and extending closely along said inner surfaces of said bosses and secured to said horizontal plates;

said transverse rod extending through said holes in each of said side plates for supporting said hitch;

whereby said hitch is supported by said transverse rod and said forward extension on one of said horizontal plates.

4,268,057

CONTROL DEVICE FOR THREE-POINT HITCH

Roger F. Engelmann, and James E. Thurler, both of Racine, Wis., assignors to J. I. Case Company, Racine, Wis.

Filed Sep. 21, 1979, Ser. No. 77,523

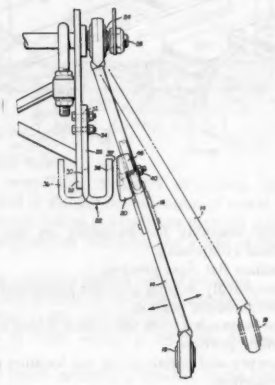
Int. Cl.[3] **A01B** *59/043*

U.S. Cl. 280—474 **4 Claims**

1. A tractor having a hitch assembly including draft arms laterally spaced and pivotally mounted at one end to the tractor frame for lateral and vertical movement relative thereto, the improvement comprising:

bar bracket means mounted to said tractor frame adjacent each of said draft arms, said bar bracket means being adjustable on said tractor frame to provide both sway and non-sway implement settings, said bar bracket means including a mounting surface and a spaced-apart vertical bearing surface, said bar bracket means being generally J-shaped and said mounting surface being generally parallel to said bearing surface, said bar bracket means being mounted to said tractor frame at one position for said sway implement setting, and said bar bracket means being mounted to said tractor frame at a second position for said non-sway implement setting;

a sliding block mounted to each draft arm for sliding engagement with said bar bracket means, said sliding block including a contoured surface portion and a tapered surface portion, said contoured surface portion of said sliding block including inclined surface portions which meet at a crest substantially in the middle of the body of the sliding block, the contact point between said contoured surface portion and its opposed bar bracket being slidably shift-



able from a point on one of said inclined surfaces to the crest and finally to a point on the other inclined surface as said draft arms are raised and lowered in the non-sway implement setting;

said sliding block and said bar bracket means being adjusted to said non-sway implement setting such that said contoured surface portion slidingly engages said bar bracket bearing surface to maintain a constant dimension between said draft arms while said hitch assembly is either being lowered or raised; and

said sliding block and said bar bracket means being adjusted to said sway implement setting such that said tapered surface portion slidingly engages said bar bracket to permit a limited sway of said hitch assembly independent of the movement of said tractor.

4,268,058

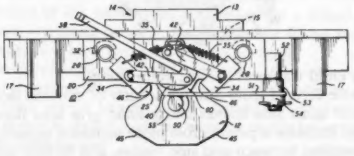
COUPLER FOR SNOWPLOW

Eugene A. Farrell, Fishers Landing, and Jean A. LaBow, Fineview, both of N.Y., assignors to Frink Sno-Plows, Clayton, N.Y.

Filed Aug. 10, 1979, Ser. No. 65,441

Int. Cl.[3] **B60D** *1/02, 3/00*

U.S. Cl. 280—481 **8 Claims**



1. In a coupler for attaching a push frame of a snowplow unit to a prime mover wherein an extended tongue is affixed to the

push frame and inserted into the coupler, said tongue having a pair of camming surfaces that are adapted to engage a pair of spring-biased jaw elements mounted upon the coupler to automatically move the jaw elements to an open position as the tongue enters the coupler and then permit the jaws to move into a locked position within recessed shoulders formed in the camming surfaces whereby the push frame is drawn securely against the coupler, the improvement comprising

an actuating bar pivotably mounted at one end in the coupler to allow the bar to swing in a vertical plane, an elongated bolt affixed to the opposite end of the bar that is arranged to move into a receiving hole formed in the tongue, a follower surface on said bar that rides in contact with one of the jaw elements to guide the bolt into the receiving hole as the jaw elements are moved into a locked position.

4,268,059

PROCESS AND APPARATUS FOR FORMING A PROFILED TREAD SURFACE ON A SKI

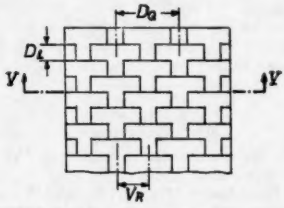
Adolf Staufer, Ried im Innkreis, Austria, assignor to Fischer Gesellschaft m.b.H., Ried im Innkreis, Austria

Filed May 7, 1979, Ser. No. 36,807

Claims priority, application Austria, Jul. 20, 1978, 5280/78; Nov. 30, 1978, 8556/78

Int. Cl.³ A63C 7/06

U.S. Cl. 280—604 **1 Claim**



1. A ski having a profiled tread surface, comprising individual step ramps, which are sawtooth-shaped in longitudinal section and in a transverse section rise in a gentle curve to a maximum height and then gently decline, said step ramps defining successive rows of recesses, the recesses of adjacent rows being staggered by one-half the width of each recess, and the rows of recesses overlapping each other so that the deeper end of each recess bridges the space between adjacent recesses of an adjacent row of recesses.

4,268,060

SKI BRAKE

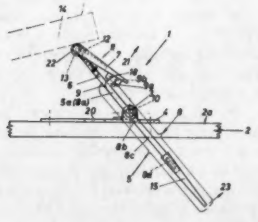
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Jan. 25, 1979, Ser. No. 6,389

Claims priority, application Austria, Jan. 27, 1978, 616/78; Feb. 16, 1978, 1102/78

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **19 Claims**



1. In a ski brake having at least one braking leg pivotal by a force applied by a ski boot or by a sole plate secured to a ski boot to a pedal about an axle extending substantially at a right angle with respect to the longitudinal axis of a ski in a mounting member secured to said ski, said braking leg being pivotal between a braking position and a retracted position, an erecting spring resisting a pivoting of said braking leg toward said retracted position, said braking leg having a braking mandrel thereon and a first segment therein which extends from said braking mandrel toward the central longitudinal axis of the ski, said braking leg being held totally above the upper surface of said ski and between the lateral edges of said ski in the retracted position of said ski brake by said pedal which is stepped down upon by said ski boot or by said sole plate, and in the braking position of said ski brake, said braking mandrel is positioned laterally outside of one of said ski edges and said braking leg projects below the running surface of said ski, said braking leg being pivotal about first means defining a swivel shaft which extends in longitudinal direction of the ski, the improvement comprising wherein said first means defining a swivel shaft includes at least one further second segment on said braking leg which extends substantially parallel with respect to said central longitudinal axis of said ski brake, and second means operatively connecting said second segment to said axle to facilitate said pivotal movement of said braking leg about the axis of said second segment.

4,268,061

SKI BRAKE

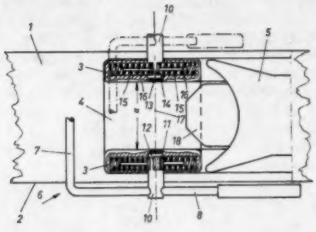
Paul Unger, Bruckwiesenstr. 113, Altenberg b. Nurnberg, Fed. Rep. of Germany (D.8501)

Filed Aug. 27, 1979, Ser. No. 69,897

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837787

Int. Cl.³ A63C 7/10

U.S. Cl. 280—605 **2 Claims**



1. Ski brake on a ski to be used with a ski boot comprising

a base plate mounted on said ski;

a heel grip mounted on said base plate and having a stepping spur extending forwardly therefrom on an intermediate part of said ski;

a pair of hollow, elongated, juxtaposed holding devices, each device mounted between said stepping spur and an outer edge of said ski;

a pair of opposing springs mounted in each holding device;

a pair of separated stub shafts, each said stub shaft mounted respectively at approximately the midpoint of each said holding device;

each said stub shaft having a pair of parallel abutment surfaces for receiving thereagainst an individual end of an opposing spring when each said stub shaft is in a first position for braking action;

a U-shaped braking guide bar comprising arms extending to be mounted respectively at an intermediate point thereof in each stub shaft, and each arm extending further beyond each said stub shaft to provide said braking action; and

said stub shafts movable into a second position when said ski boot presses down on said guard bar to rotate said stub shafts and move said abutment surfaces out of contact

with said ends of said opposing springs and move said extending arms out of said braking position.

4,268,062

SOLE SUPPORT PLATE

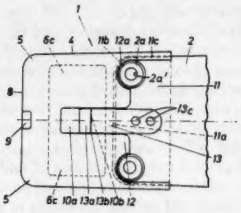
Heinz Wittmann, Vienna, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Jul. 12, 1979, Ser. No. 57,103

Claims priority, application Austria, Jul. 17, 1978, 5143/78; Mar. 21, 1979, 2099/79

Int. Cl.³ A63C *9/00*

U.S. Cl. 280—611 **4 Claims**



1. In a sole support plate for ski bindings releasably fixed to a ski-fixed means of a ski binding part, said ski-fixed means having laterally spaced guideways thereon, an offset part and a recess on its underside, a bottom surface of said recess resting on the upper side of said ski-fixed means, said recess having a groove on each of two laterally spaced and vertically extending side surfaces, said grooves receiving said guideways therein, said sole support plate having a cavity in the region of said recess adapted to releasably receive therein said offset part of said ski-fixed means, the improvement comprising wherein said offset part is provided on the free end of a tonguelike locking part which extends longitudinally of said ski away from said ski-fixed means and includes a first step, wherein said cavity is provided in said bottom surface of said recess in said sole support plate and includes a second step operatively engaged with said first step to prevent inadvertent release of said sole support plate from said ski-fixed means, and wherein said offset part at the end of said locking part extends away from said first step and terminates in a plane defined by the underside of said locking part.

4,268,063

CROSS COUNTRY SKI BINDING

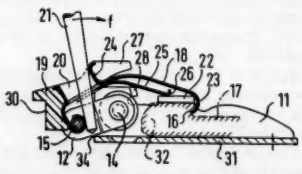
Peter Biermann, Leonberg; Rudi Feucht, Weissach, and Manfred Schmidt, Sindelfingen, all of Fed. Rep. of Germany, assignors to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH, Leonberg, Fed. Rep. of Germany

Filed Aug. 7, 1978, Ser. No. 931,539

Claims priority, application Fed. Rep. of Germany, Aug. 5, 1977, 2735489

Int. Cl.³ A63C *9/18*

U.S. Cl. 280—615 **22 Claims**



1. Cross country ski binding comprising:

fixed binding means for attachment of a ski boot to a ski, said fixed binding means having side plate means and top restraint means for forming a chamber that is open at at least one end for receiving and locating, in use, a front portion of a sole of a ski shoe;

clamp means for releasably securing a ski boot to said fixed binding means, said clamp means comprising an elastically resilient spring clamp having a hook-shaped ski shoe sole engaging formation at a first end;

link means for enabling displacement of said clamp means relative to said fixed binding means, said link means being pivotally connected at a first end to said fixed binding means for movement about a fixed pivot axis;

over center pivot axis means for interconnecting a second end of said clamp means with a second end of said link means forwardly of said chamber;

actuating means for engaging and releasing the clamp means by producing pivotal movement of the link means and clamp means about said fixed pivot axis between released and fully engaged positions by fore and aft pivotal movement of a ski pole engageable in said actuating means, said actuating means being associated with said spring clamp and comprising an aperture through a forward portion of said clamp means and sized for enabling insertion of a tip of a ski pole, said aperture having front and rear borders, the rear border being closer to said hook-shaped formation than said front border, and wherein said aperture is located, when said clamping means is in said fully engaged position, in general above said over center pivot axis, with the rear border of said aperture lying in general above a corresponding rear border of the over center pivot axis in a manner whereby an engaged tip of a ski pole contacting both said rear borders results in a position of the ski pole inclined in a slightly forward direction.

4,268,064

SOLE HOLDER

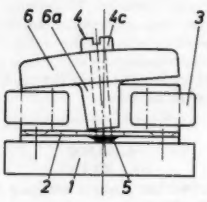
Josef Svoboda, Schwechat, Austria, assignor to TMC Corporation, Baar, Switzerland

Filed Apr. 5, 1979, Ser. No. 27,449

Claims priority, application Austria, Apr. 6, 1978, 2418/78

Int. Cl.³ A63C *9/085*

U.S. Cl. 280—625 **15 Claims**



1. A device for engaging and holding a sole of a ski boot to a ski, comprising:

base means adapted to be mounted to the upper surface of said ski and having first means defining an opening therein;

lever means pivotally secured to said base means for movement between first and second positions and at a location spaced from said opening, said lever means including second means adapted to engage the sole of said ski boot when in said first position thereof;

a sole holder located above said lever means and including third means adapted to engage the top edge of said sole of said ski boot and fourth means for movably securing said sole holder to said base means and for movement between first and second positions, said fourth means including a normally vertically aligned elongated fastener, the lower end of which is received in and guided in said opening, said fastener being movable relative to said base means in a vertical plane extending transverse to the longitudinal

axis of the ski in response to a movement of at least one of said sole holder and said lever means between said first and second positions thereof, said first position of said sole holder and said lever means corresponding to said vertically aligned position of said fastener, said second position of said sole holder and said lever means corresponding to a position of said fastener inclined to said normal vertically aligned position thereof; and

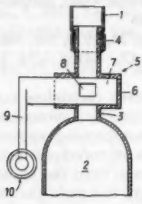
resilient means for continually urging said fastener to said vertically aligned first position.

4,268,065

DEVICE FOR DISCHARGING PRESSURE GAS RESERVOIRS

Hubert Granig, Feldkirchnerstr. 30/87, Klagenfurt (Kärnten), Austria

Filed Jun. 28, 1978, Ser. No. 920,069
Claims priority, application Austria, Jul. 4, 1977, 84750/77
Int. Cl.³ B60R *21/08*
U.S. Cl. 280—737 **8 Claims**



1. A device for discharging pressure gas from a pressure gas reservoir, comprising

a discharge conduit defining a discharge passage adapted to communicate with said reservoir,

a valve member associated with said passage and movable between shut-off and full-flow positions and arranged to close and open said passage in said shut-off and full-flow positions, respectively,

actuating means releasable to move said valve member from said shut-off position to said full-flow position,

said actuating means comprising an energy storage device operatively acting on said valve member,

releasing means operable to release said actuating means for moving said valve member from said shut-off position to said full-flow position,

said valve member consists of a rotatable valve plug, and

said actuating means comprise a lever which is connected to said energy storage device and non-rotatably coupled to said plug.

4,268,066

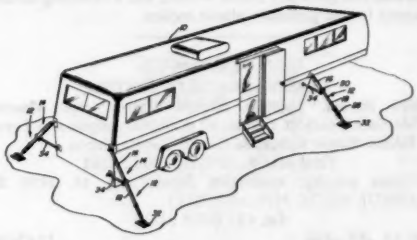
RECREATIONAL VEHICLE WIND STABILIZER

Vernon E. Davis, 1324 Cypress St., Casper, Wyo. 82601

Filed Sep. 5, 1979, Ser. No. 72,618
Int. Cl.³ B60S *9/02*
U.S. Cl. 280—763 **10 Claims**

1. In combination with a recreational vehicle of the type including wheeled running gear and a body spring supported from said running gear, a plurality of opposite side vehicle wind stabilizers, each of said stabilizers including an elongated strut having first and second large and small diameter relatively telescoped opposite end portions, the ends of said first end portions remote from said second end portions including mounting means mounted on a corresponding side of said vehicle body, the free ends of said second end portions remote from said first end portions including relatively extendably adjustable spring biased foot portions for engagement with the ground, a plurality of elongated braces including first and second ends, said first ends of said braces each being anchored to the corresponding side of said vehicle and said second ends of said braces each being anchored relative to the corresponding strut intermediate its opposite ends, and adjustable abutment means supported from and adjustable along the corresponding strut small diameter end portion immediately adjacent the corresponding strut large diameter end portion and abutted thereagainst to limit telescoping of the small diameter strut end portions into said strut large diameter end portions, said struts extending downwardly and outwardly from the corresponding sides of said body said abutment means being adjustable independently of said spring biased foot portions.

5. A stabilizer for use in levelling and stabilizing the body of a recreational vehicle, said stabilizer including an elongated strut having first and second upper and lower relatively ex-



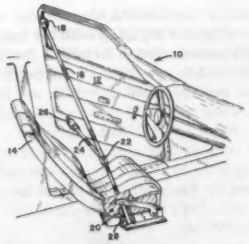
tendable end portions, the upper end of said upper end portion including first anchor means for anchoring said strut to said body with said strut inclined downwardly and outwardly away from said body, the lower end of said lower end portion including an endwise outwardly extendably adjustable spring biased ground engageable foot assembly, and an elongated brace including second anchor means on one end for anchoring relative to said body below said first anchor means, the other end of said brace including abutment means releasably secureable in adjusted position along one of said end portions and abuttingly engaged by the other end portion to limit relative contraction of said end portions said abutment means being adjustable independently of said spring biased foot assembly.

4,268,067

SEAT BELT TENSION ELIMINATOR

Rudy V. Thomas, Macomb, Mich., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jul. 30, 1979, Ser. No. 62,276
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—802 **15 Claims**



1. A vehicle safety belt system comprising:

(a) a lap belt and a separate shoulder belt adapted to be positioned about an occupant in a seat in said vehicle, said belts being connected to at least one seat belt retractor; and

(b) means to eliminate undesirable tension exerted on said occupant by said shoulder belt due to the retraction force of said retractor, said means comprising

(c) fastening means associated with each of said belts and extending at least partially within a region of each of said belts that is secured about said occupant, said fastening means being adapted for engagement with each other when said belts are secured about said occupant, whereby the tension exerted by said shoulder belt is transferred to said lap belt.

14. A junction device adapted for use in a vehicle safety belt system including lap and shoulder belts, said junction device comprising a generally planar section adapted to be secured to said lap belt, a leg extending from said generally planar section, slot means formed in said leg and adapted for communication with said shoulder belt, a pivotable lever mounted on said leg adjacent said slot and adapted to move said shoulder belt towards said generally planar section, and a velveting fastener secured to said generally planar section.

4,268,068

PASSIVE SEATBELT SYSTEM

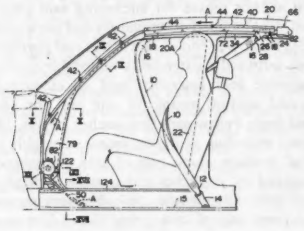
Ichiro Suzuki, Nagoya; Hisashi Ogawa, and Masanao Motonami, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1979, Ser. No. 37,151

Claims priority, application Japan, Aug. 16, 1978, 53-112186[U]; Jan. 24, 1979, 54-8082[U]

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **13 Claims**



1. A passive seatbelt system of the type including a seatbelt, a flexible tape having a plurality of holes along its length and which is coupled to the seatbelt to cause the seatbelt to automatically fasten and unfasten from a passenger and a moving means for causing movement of the flexible tape, said moving means comprising:

a sprocket housing having a substantially circular recess formed therein;

a sprocket wheel provided in the circular recess of the sprocket housing and engaging with the holes in the tape;

an arc-shaped channel which is formed in the sprocket housing and accomodates a portion of the flexible tape;

a pair of tape passage channels which are formed in the sprocket housing tangential to the arc-shaped channel and which are oriented in different directions;

a plurality of extra passage channels formed in the sprocket housing tangential to the arc-shaped channel; and

a driving means for selectively rotating the sprocket a predetermined number of rotation in a clockwise and counter-clockwise direction.

10. A passive seatbelt system of the type including a seatbelt, a flexible tape having a plurality of holes along its length which is coupled to the seatbelt to cause the seatbelt to automatically fasten and unfasten from a passenger and a moving means for causing movement of the flexible tape, said moving means comprising:

a sprocket housing;

a lid fastened to the sprocket housing and defining a space between the sprocket housing and itself;

a sprocket wheel provided in the space defined between the sprocket housing and the lid and engaging with the holes in the tape;

one or more L-shaped first tape guides fastened to said sprocket housing and extending tangential to the sprocket housing, said guides being arranged in different directions from each other when a plurality of guides are used;

an L-shaped second tape guide fastened to said lid, and extending tangential to the lid in different directions said first and second tape guides being arranged in the same directions and configured so as to provide a guide path for said flexible tape and for holding said flexible tape in engagement with said sprocket wheel; and

a driving means for selectively rotating the sprocket wheel a predetermined number of rotation in a clockwise and counter-clockwise direction.

4,268,069

PAPER COATED WITH A MICROCAPSULAR COATING COMPOSITION CONTAINING A HYDROPHOBIC SILICA

John J. Stolfo, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 31, 1979, Ser. No. 108,919

Int. Cl.³ B41M *5/16, 5/22*

U.S. Cl. 282—27.5 **3 Claims**

1. A pressure-sensitive carbonless copy paper, said copy paper being characterized by a substantial reduction of specking when used in photocopying apparatus which utilizes a pressure nip between a photoreceptor belt and a transfer roll to transfer a powder image from the photoreceptor belt to the paper and having utility in a multi-part form, said copy paper comprising a paper substrate to which a transfer coating has been applied, said transfer coating comprising microcapsules containing an oil solution of a chromogenic material, said microcapsules having a mean spherical diameter of from 3 to 12 microns, said chromogenic material being a color precursor of the electron donating type, said transfer coating further containing finely divided silica particles, stilt material and a binder for said microcapsules, said stilt material and said silica particles, said silica particles having been modified by treatment with an organic material to make the surface of said silica particles substantially hydrophobic, said treated silica particles having a surface area of about 50 m^2/g or more and being present in said coating composition in from about 0.1% to about 10% by weight of the total solids of said coating.

4,268,070

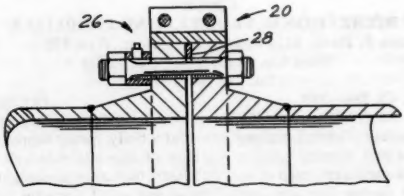
ORIFICE FLANGE CLAMP

Harold R. Adams, St. Francisville, Ill. 62460

Filed Jun. 1, 1978, Ser. No. 911,379

Int. Cl.³ F16L *23/02, 55/16, 55/18*

U.S. Cl. 285—15 **6 Claims**



1. An orifice flange clamp for use with an orifice flange comprised of a pair of oppositely extending conduits fixed to opposed flanges adapted to be drawn toward one another against an intermediate orifice plate, said clamp comprising a circular band adapted to be clamped on the periphery of said flanges sealing the exterior peripheral interface therebetween and means for introducing a fluid sealant under pressure in the

interior interface between said flanges, said means comprising an elongated member fitting through a pair of opposed flange holes having a first end secured to one of said flanges and a reduced intermediate portion fitting loosely within a flange hole in an opposed flange and extending therethrough to a second end, collar means fitting loosely over said extending end, a plurality of arcuate sealing ring segments fitted end to end at the interface of said opposed flanges in peripheral sealing relation and nesting in engaging relation with the interior of said band and means for introducing sealant into said collar past the eleongated member and through the flange hole between said sealing rings and said orifice plate into the interface between the opposed flanges to seal the same, the flanges having plug means on the periphery thereof and said band having cut-out means receiving said plug means therethrough.

4,268,071

DEVICE FOR COUPLING PIPELINE FLANGES

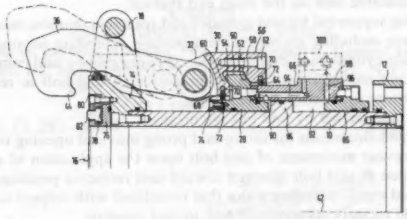
Siegfried Hanchen, Ostfildern, and Hans D. Fabrowsky, Neuhausen, both of Fed. Rep. of Germany, assignors to Herbert Hanchen KG, Ostfildern, Fed. Rep. of Germany

Filed Dec. 4, 1978, Ser. No. 966,515

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1977, 2753667

Int. Cl.³ F16L *23/00*

U.S. Cl. 285—18 **19 Claims**



1. A coupling device for connecting the flanges of two flanged pipelines comprising a plurality of radially spaced axially extending gripping dogs positioned around the circumference of one of said pipelines, said dogs being pivotally connected to a dog support ring so that said dogs project and pivot over the flange of one of said pipelines in a radial plane for engaging the flange of the other of said pipelines, drive means for axially moving said dog support ring and said dogs, and guide means for controlling the pivoting of said dogs in relation to axial movement of said dog support ring, said drive means including a bearing ring axially slideable on said one of said pipelines and including an outer convex spherical surface having its center of curvature on the axis of said one of said pipelines near the plane of the flange thereon, said dog support ring having a concave spherical surface complementary to said convex surface, annular clamp means for maintaining said spherical surfaces in slideable contact, whereby upon actuation of said drive means, said dogs axially urge said flanges into contact and misalignment of said flanges is compensated by pivotal motion of said dog support ring on said bearing ring at said surfaces.

4,268,072

PIPE COUPLING FOR INTERCONNECTING PIPES EXPERIENCING LENGTH CHANGES

Immanuel Straub, 7323 Wangs, Switzerland

Filed Apr. 2, 1979, Ser. No. 26,054

Claims priority, application Austria, Apr. 10, 1978, 2517/78

Int. Cl.³ F16L *17/04*

U.S. Cl. 285—112 **6 Claims**

1. A pipe coupling for interconnecting confronting ends of pipes experiencing changes in length comprising:

a housing flexibly clampable about the pipe ends to be interconnected;

a sealing gasket enclosed within said housing;

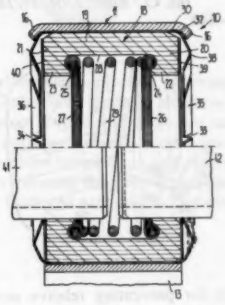
said sealing gasket having a substantially C-shaped axial cross-sectional configuration and being open towards the interior of said housing;

said sealing gasket including two confronting sealing lips each intended to sealingly engage the outside surface of a respective one of the pipe ends to be interconnected when the housing is being clamped;

said sealing gasket further including web means positioned adjacent the inner surface of said housing and end sections merging with said sealing lips;

each of said end sections having an end face;

each of said end faces bearing against one side of a respective



ring-shaped disk arranged to allow limited axial movement of said sealing gasket relative to said housing;

means flexibly connected to the housing for fixedly engaging the outer surface of the pipe ends when the housing is being clamped and providing an axial stop for the other side of the respective ring-shaped disk, said means being arranged for limited axial movement relative to said housing upon movement of said pipe ends relative to said housing; and

a compression spring being arranged within said sealing gasket for urging the end face of each end section against the respective ring-shaped disk and for urging the latter against the respective axial stop;

wherein no wear occurs on the sealing lips of the gasket because said gasket lips move with said pipe ends upon movement of said end rings relative to said housing.

4,268,073

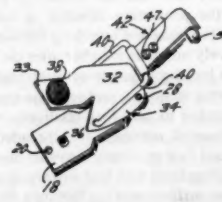
WINDOW LEVER LOCK

Mark W. Hibbert, 1506 11th South, Seattle, Wash. 98134

Filed Jul. 16, 1979, Ser. No. 57,610

Int. Cl.³ E05C *5/02*

U.S. Cl. 292—113 **10 Claims**



1. In combination with a lever and a lever-controlled, swingable, window mounted in a window support, a base member secured to the window support for said window and in close proximity to the lever; one part of a female-male boss-screw

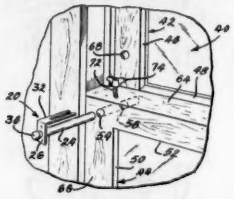
combination carried by said base member; a swing member hingedly connected with said base member; the other part of said female-male combination carried by said swing member and mounted for movement into and out of alignment for threaded engagement with said one part of the female-male combination; and a hook member pivotally connected at one end portion with said swing member and terminating at its other end portion with a catch means detachably connected with the lever of the lever-controlled window for preventing movement of said lever when connected thereto.

4,268,074

DEVICES FOR LOCKING SLIDING CLOSURES

James H. Alexander, 6175 Delmar Blvd., St. Louis, Mo. 63112

Filed Nov. 26, 1976, Ser. No. 745,086
Int. Cl.³ E05C *1/04, 19/18*
U.S. Cl. 292—149 **2 Claims**



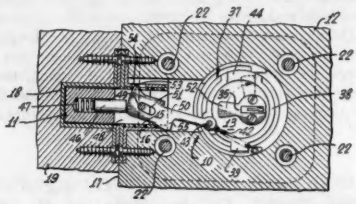
1. A device for preventing relative movement between relatively movable first and second members of sliding window and sliding door assemblies, said first member having a first surface, an adjacent second surface and a single hole extending from said second surface through the first member at a location spaced from said first surface, the second of said relatively movable members having a surface with an opening extending therefrom partway therethrough, at least one of said first and second members being movable relative to the other to locate the single hole in registration with the opening, said device comprising a one-piece locking member having a relatively flat body portion with opposite sides and a side edge, a leg having a relatively flat portion formed integral with said side edge and extending angularly from one of the opposite sides of said body portion, and a projecting member fixedly attached to and extending from said body portion in spaced substantially parallel relationship to the flat portion of said leg, said projecting member having a length and cross-sectional shape to be inserted into simultaneous cooperative engagement with said hole and said opening when in registration, insertion of said projecting member moving said relatively flat body portion into relatively flush abutment with said second surface on said first relatively movable member to limit penetration of said projecting member into said opening, the relatively flat portion of said leg simultaneously moving into substantially flush engagement with said first surface to prevent rotational movement of the projecting member in said hole and said opening, separate means for attaching the locking member to said first relatively movable member after the locking member is positioned in locking engagement with the first and second relatively movable members, said separate means for attaching the locking member to said first relatively movable member including a threaded member, the threaded member being engaged with said first relatively movable member and having a portion extending from said first surface at a location spaced from said second surface, said leg having a slot formed therein for cooperatively receiving said threaded member during installation of the device, and means engageable with said extending portion of said threaded member and with said leg to lock the device in installed position.

4,268,075

LOCK OF THE DEAD BOLT TYPE

Howard M. Allenbaugh, 16360 Sandalwood St., Fountain Valley, Calif. 92708

Continuation-in-part of Ser. No. 923,912, Jul. 12, 1978. This application Apr. 25, 1979, Ser. No. 33,179
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—167 **29 Claims**



1. A door lock of the dead bolt type comprising:
a bolt;
a housing including a sleeve in which said bolt is reciprocable between a retracted position and an extended position, said housing having an opening therein;
a lock cylinder disposed within a transverse opening extending through a door, said cylinder having an eccentric rotatable cam on the inner end thereof;
a ring supported by said cylinder and rotatable thereon, said ring including an engagement portion extending beyond said cylinder and defining a recess engagable by said cam;
linkage means for causing reciprocation of said bolt in response to rotation of said ring;
a prong carried by said linkage means;
pin-and-slot means for lifting said prong into said opening to prevent movement of said bolt upon the application of a force to said bolt directed toward said retracted position, said catch including a slot that is inclined with respect to the reciprocation of said bolt in said housing;
abutment means carried by said linkage means and normally aligned with a portion of said housing for retaining said bolt in said housing when a force is applied to said bolt in its direction of movement from said retracted position to said extended position;
stop means for arresting rotation of said ring in first and second positions corresponding to said retracted and extended positions of said bolt, respectively; and
resilient means disposed within said bolt for urging said bolt toward said extended position and for simultaneously urging said ring toward said first and second positions.

4,268,076

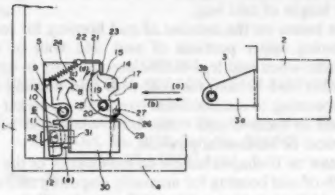
CASH BOX PROVIDED WITH A TILL

Toshihiro Itoi, Tokyo, Japan, assignor to Kabushiki Kaisha Itoi Seisakusho, Tokyo, Japan

Continuation of Ser. No. 870,292, Jan. 18, 1978, abandoned. This application Jul. 23, 1979, Ser. No. 59,622
Claims priority, application Japan, Sep. 27, 1977, 52-129495
Int. Cl.³ E05C *3/06*
U.S. Cl. 292—216 **3 Claims**

1. A cash box provided with a till, comprising in combination;
a cash box,
a till slidable into and out of the cash box and provided with an engage body on the rear end of the till, the engage body having members forming a channel, the members being inserted and fixed on an engage rod, an L-shaped base plate uprightly secured on a bottom plate within the cash box, a frame plate formed into a channel-shape having side plates, one of the side plates being formed into a beak-shaped projection on its right upper portion and being cut out on its right lower portion, the other of said side plates being cut out on its right upper portion and having a

bearing plate formed at its central portion to be rotatably supported by a shaft on said base plate, a movable rod fitting plate portion being formed at the lower portion of said other side plate and connected with a movable rod through a vertical oblong hole in the movable rod fitting plate portion and a connecting pin therein, a plate cam



provided with an engage groove and an engage projection on its peripheral portion and being rotatably supported by a shaft on said base plate so that said engage body engages with or disengages from said engage groove to engage or disengage said engage projection with or from said projection of said frame plate, and an electromagnetic means for directly operating said movable rod.

4,268,077

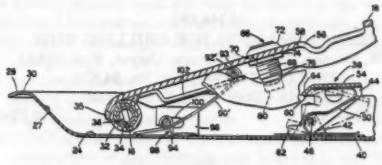
SELF-STORING DOOR HANDLE

Brian O. Bohleen, Kenosha, Wis., and Randall C. Hansen, Gurnee, Ill., assignors to Abex Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,394

Int. Cl.[2] **E05C** *13/02, 3/08*

U.S. Cl. 292—336.3 **8 Claims**



1. A self-storing, flush-mounted door latch actuator comprising a pan, a recessed bottom portion in the pan, a handle movable between a stored position within the pan and a released position pivotally attached to the pan, handle storing means connected to the handle characterized by first anchor means attached to the handle, second anchor means attached to the pan, spring means for biasing the handle toward the stored position, manually attachable to and detachable from the first anchor means and the second anchor means, wherein the spring means includes a torsion spring and a rod which passes through the torsion spring, the rod is removably attached to the second anchor means, and one end of the torsion spring is removably connected to the first anchor means.

4,268,078

SHOCK ABSORBING BUMPER

Takao Nomura, Toyota; Yoshiro Umemoto, Nagoya; Yasuhiro Mishima, and Tugumi Sanmiya, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 30, 1979, Ser. No. 43,707

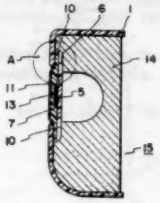
Claims priority, application Japan, May 30, 1978, 53-72290[U]; Aug. 29. 1978, 53-117333[U]

Int. Cl.[3] **B60R** *19/00*

U.S. Cl. 293—120 **11 Claims**

1. A shock absorbing bumper comprising an elastic external guard member having sheathed therein a flexible core member and an elastic decorative facing provided on the front side of the external member, the improvement which comprises said external member having in its front surface

side walls and a bottom wall forming a lateral recession provided with a plurality of generally rectangularly shaped insertion holes arranged along the upper and lower edges where the side walls join the bottom wall, and said decorative facing is provided on a relatively thin elastic



facing base provided with a plurality of correspondingly rectangularly shaped claws arranged along the upper and lower edges thereof so that said claws are matingly engaged into said corresponding insertion holes to thereby secure said facing base integrally to said external bumper member thereby resisting vibrational disengagement of said facing base from said external bumper member.

4,268,079

SHOCK ABSORBING BUMPER

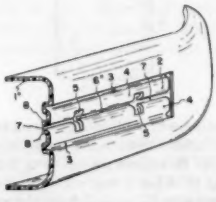
Takao Nomura, Toyota; Yoshiro Umemoto, Nagoya; Yasuhiro Mishima, and Tugumi Sanmiya, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed May 30, 1979, Ser. No. 43,708

Claims priority, application Japan, May 30, 1978, 53-72289[U]; May 30, 1978, 53-72291[U]

Int. Cl.[3] **B62D** *35/00*

U.S. Cl. 293—120 **14 Claims**

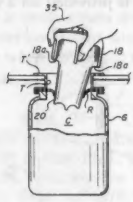


1. A shock absorbing bumper having an elastic decorative facing secured to a recessed portion provided horizontally on an external surface of an elastic external bumper member which has sheathed therein a flexible core member, the improvement wherein a pair of notches are provided in said recessed portion along its length, a row of holes are provided between said notches, and slits are provided between every pair of said holes while an elastic facing base has on its outer surface the decorative facing, is provided on its rear side with at least one hook designed to engage in said slits and has rims designed to engage in said notches.

4,268,080
MANUAL TOOL FOR FEEDING REFUSE TO A GARBAGE GRINDER DISPOSAL

William L. Lindley, P.O. Box 1292, Conroe, Tex. 77301

Filed Jan. 21, 1980, Ser. No. 113,583
Int. Cl.[3] A47F *13/08*
U.S. Cl. 294—1 R 2 Claims

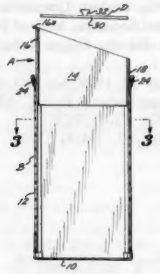


1. A manual tool for feeding refuse to a garbage grinder disposal comprising:
   a. a unitary body;
   b. said body including:
      (1) a head portion adjacent one end of said body;
      (2) said head portion having a plurality of spaced, longitudinally extending recess means therein to define longitudinally extending ribs between said recess means;
      (3) shaft means extending longitudinally from said head portion and of a size for inserting in the grinder; and
      (4) surface means projecting from the end of said shaft portion whereby refuse may be engaged by manual manipulation of the tool and stuffed into the garbage grinder.

4,268,081
REFUSE RECEIVING ASSEMBLY

Leon A. Hawkinson, 911 N. Richman, Fullerton, Calif. 92632

Filed Oct. 22, 1979, Ser. No. 87,558
Int. Cl.[3] A01B *1/04*
U.S. Cl. 294—55 2 Claims

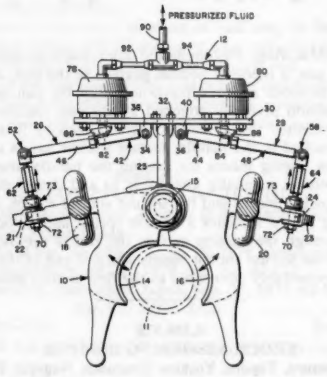


1. In combination with a pliable trash receiving plastic bag of the type that includes a bottom and a continuous side wall that extends upwardly therefrom an assembly for selectively supporting said bag in either a first substantially horizontal position where refuse may be moved from the supporting ground surface into the bag or a second position where the bag is vertically disposed after being filled with refuse, said assembly when in said second position capable of having said assembly lifted upwardly therefrom to permit said bag to have the upper portion thereof tied to maintain the refuse within the confines thereof, said assembly including:
   a. a trash receiving housing that includes a pair of spaced parallel side walls, a first and second parallel end walls that extend between said pair of side walls and occupy fixed positions relative thereto, said first end wall of substantially greater length than said second end wall, said housing of such generally square transverse cross-section as to snugly engage the interior of said bag when the latter is extended thereover said first end wall having a first transverse edge;
   b. four rigid legs secured in equally spaced relationship to said housing and extending downwardly therefrom, with said legs of such length that said housing when in said second position has the lower portion thereof disposed above the supporting ground surface a distance less than the height of said bag;
   c. first means on the exterior of said housing for removably securing upper portions of said side wall of said bag thereto when said legs extend downwardly in said bag to contact said bottom thereof, with said housing and legs cooperating to maintain said bag in an expanded configuration to receive said refuse both when said bag is in a vertical or horizontal position;
   d. at least on U-shaped handle on the exterior of the said side walls of said housing for manually disposing said assembly in said first position with said first end wall downwardly disposed and at least partially resting on said ground supporting surface to permit refuse to be moved into said expanded bag supported on said housing and legs, with said handle when said bag is filled with refuse being used to pivot said assembly and bag to an upright position where said assembly may be lifted from said bag filled with refuse, and the upper portion of said bag thereafter being tied or otherwise secured to prevent refuse falling therefrom; and
   e. a lip on the said transverse edge of said first end wall that extends downwardly and outwardly therefrom when said assembly is in said first position to rest on said ground supporting surface and to assist in sweeping said refuse from said ground supporting surface into the interior of said housing and bag.

4,268,082
ELEVATOR LATCH FOR DRILLING RIGS

Frank W. Hooton, 715 N. Jefferson, Casper, Wyo. 82601

Filed Oct. 24, 1979, Ser. No. 34,176
Int. Cl.[3] B66C *1/10;* E21B *19/06*
U.S. Cl. 294—88 9 Claims



1. In a drilling rig having an elevator for raising and lowering drill stems and pipes, said elevator having a pair of pivotable sections to clamp said drill stems and pipes and a back handle, elevator latching means removably attached to said elevator and responsive to an operator for automatically closing said elevator to clamp said drill stems and pipes, said elevator latching means comprising:
   mounting means removably attached to said back handle of said elevator for mounting said elevator latching means on said elevator;

arm means pivotably mounted on said mounting means and removably fastened to said pivotable sections of said elevator for closing said elevator;

driving means coupled to said arm means for driving said arm means; and

operator control means connected to said driving means and responsive to the operator for automatically actuating said driving means to close said elevator on said drill stems and pipes.

4,268,083

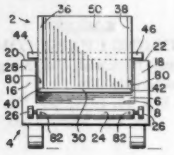
UNIVERSAL CARRIER ATTACHMENT FOR PICK-UP VANS

Donald C. Carpenter, 1730 Audrey Dr., Clearwater, Fla. 33519

Filed Oct. 26, 1978, Ser. No. 954,926

Int. Cl.³ B60P *3/42*

U.S. Cl. 296—10 **1 Claim**



1. A carrier attachment for a truck vehicle having a cargo compartment including a horizontal bed located behind a driver's cab, bounded on three sides by a front wall having a top surface and a first and second opposed side walls having top surfaces, with a vertically swinging, bottom mounted tail gate having opposite ends pivotally mounted on the rearward ends of said first and second side walls, respectively, forming a fourth side of said cargo compartment when in a closed position, comprising:

a horizontal platform fitted within said cargo compartment having a front edge adjacent to said front wall and a rear edge adjacent to said tail gate;

first and second opposed vertical walls mounted along opposed edges of said platform and adjacent to said first and second side walls, respectively;

a first horizontal lip mounted to the outside of said first vertical wall and resting on said top surface of said first side wall, for supporting said first vertical wall and said platform to depend downwardly from said first lip into said cargo compartment;

a second horizontal lip mounted to the outside of said second vertical wall and resting on said top surface of said second side wall, for supporting said second vertical wall and said platform to depend downwardly from said second lip into said cargo compartment;

said tail gate mechanically contacting said rear edge of said platform when in said closed position;

a forward vertical wall mounted to said front edge of said platform and adjacent to said front wall;

a forward lip mounted to the outside of said forward vertical wall and resting on said top surface of said front wall, for supporting said forward vertical wall and said platform to depend downwardly from said forward lip into said cargo compartment;

a first horizontal dowel mounted on said forward vertical wall of said carrier, proximate to said front wall of said cargo compartment;

said front wall of said cargo compartment having a perforation therein for mating engagement with said first horizontal dowel;

a second horizontal dowel mounted on a rearward edge of said first vertical wall of said carrier, proximate to said tail gate when closed;

said tail gate having a perforation therein for mating engagement with said second horizontal dowel when said tail gate is in said closed position;

whereby said carrier is secured to said cargo compartment.

4,268,084

TRUCK HAVING A LOAD PLATFORM AND SUPERSTRUCTURE

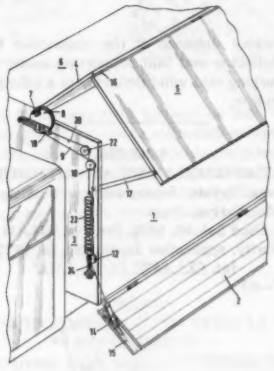
Günter Peters, Staumühle 228, 4791 Hövelhof, Fed. Rep. of Germany

Filed Mar. 5, 1979, Ser. No. 17,261

Claims priority, application Fed. Rep. of Germany, Mar. 4, 1978, 2809375

Int. Cl.³ B60P *7/04*

U.S. Cl. 296—148 **10 Claims**



1. A vehicle having a fixed central roof portion, a swingable roof portion that is hinged to the central roof portion by means of a shaft and an associated upper lateral wall portion hinged to the swingable roof portion comprising a pulley that is eccentrically mounted on the shaft about the axis of which the roof portion is swingable, a swingable lower lateral wall portion hinged to the vehicle, a traction cable connecting the lower lateral wall portion with said pulley in order to turn the pulley and the shaft and move the swingable roof portion therewith, a turnbuckle mounted eccentrically on the pulley, a tension spring attached to the vehicle, a traction cable coupling the turnbuckle to the tension spring, the turnbuckle on the pulley wheel being positioned to stress the tension spring with the lateral wall portions in the closed position, to relax the tension spring during the travel of the lateral wall portions toward the opened position, and to stress the tension spring to a maximum as the swinging movement terminates at the fully-open position.

4,268,085

WIND DEFLECTOR ARRANGEMENT IN SLIDING ROOF DEVICE FOR VEHICLE

Kunitaka Sakai, Tokyo, and Jun Ono, Shiki, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 31, 1979, Ser. No. 71,749

Claims priority, application Japan, Sep. 1, 1978, 53/120262[U]

Int. Cl.³ B60J *7/04*

U.S. Cl. 296—217 **9 Claims**

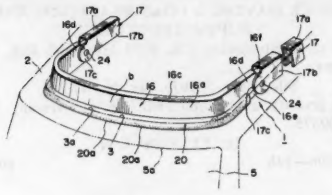
1. A wind deflector arrangement in a sliding roof device for a vehicle which includes an opening on the roof of the vehicle, comprising:

a wind deflector disposed on the inner side of the front edge of said opening;

said wind deflector being supported at the rear ends thereof;

supporting arms pivotally mounted at the rear ends on the inner side of the side edges of said opening;

said arms supporting said wind deflector at the front ends thereof so that said wind deflector is capable of angular displacement with respect to said supporting arms; and



resilient means disposed at the connection between said wind deflector and said supporting arms, said resilient means urging said wind deflector in a substantially vertical direction.

4,268,086

SEAT ASSEMBLY FOR AN AUTOMOBILE

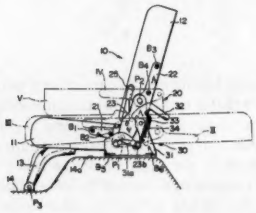
Teiji Okuyama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jul. 14, 1978, Ser. No. 924,838

Claims priority, application Japan, Jul. 16, 1977, 52-85305

Int. Cl.³ A47C *13/00, 1/032*

U.S. Cl. 297—63 **6 Claims**



1. A seat assembly for an automobile providing means for rearward adjustment to a plurality of inclined positions including horizontal and means for forwardly folding the seat assembly, the seat assembly comprising:

(a) a seat swingable about a transverse axis;

(b) a seat back;

(c) first bracket means, including a plurality of locking recesses, secured to said seat;

(d) second bracket means secured to said seat back;

(e) counter bracket means;

(f) releasing means;

(g) actuating lever means;

(h) a first pivot pin pivotally connecting one end of said counter bracket means to said first bracket means, said first pivot pin passing through openings in said releasing means and said actuating lever means;

(i) a second pivot pin pivotally connecting the other end of said counter bracket means to said second bracket means;

(j) first locking means for releasably locking said counter bracket means to said first bracket means preventing movement relative to each other comprising:

(1) a latch means disposed between said counter bracket means and said second bracket means; and

(2) a first locking pin secured to said latch means and received in a slot in said counter bracket means and adapted to selectively engage the plurality of locking recesses in said first bracket means;

(k) second locking means for releasably locking said counter bracket means to said second bracket means preventing movement relative to each other, comprising:

(1) a second locking pin secured to said counter bracket means and adapted to engage a locking recess in said latch means; and

(2) means for biasing said latch means in a direction for engaging said second locking pin with said locking recess,

said second locking means being released by said releasing means when said first locking means has been released and when said second bracket means has been pivotally moved with respect to said first bracket means in a direction to place the seat back over the seat; and

(l) guide means for guiding a portion of said counter bracket means in such a manner that the point of connection between said first bracket means and counter bracket means is moved when said seat back is moved to a horizontal position so that said seat is moved to a horizontal position to provide a bed together with said seat back.

4,268,087

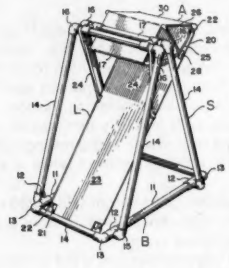
SWINGING CHAISE LOUNGE

Vincent P. Sorrentino, Parkland, Fla., assignor to Bright Industries Inc., Ft. Lauderdale, Fla.

Filed Sep. 10, 1979, Ser. No. 73,785

Int. Cl.³ A63G *9/00*

U.S. Cl. 297—273 **2 Claims**



1. A swinging chaise lounge having a rectangular base consisting of

(a) parallel spaced apart elongated tubular side members, and

(b) transversely extending parallel spaced apart elongated tubular end members cooperating with the side members to define the rectangular base,

(c) T shaped tubular connector members telescopically cemented to the ends of the spaced apart side members and having laterally extending stub support portions,

(d) elbow tubular connector members telescopically cemented to the outer ends of the T shaped connector members at one end and at their other ends cemented to the end members of the rectangular base,

(e) spaced apart upwardly extending tubular angularly converging side support members,

(f) elbow connecting members cemented to the bottom ends of the side support members and the laterally extending stub support portions of the T shaped tubular connector members,

(g) transversely extending tubular connecting means between the upper ends of the angularly converging side support members on opposite sides of the rectangular base,

(h) a lounge including an elongated rectangular shaped framework and a sheet of flexible material having looped end portions secured about the members defining the rectangular shaped lounge framework to provide a support for a person's body, and

(i) lounge support connectors between longitudinally spaced

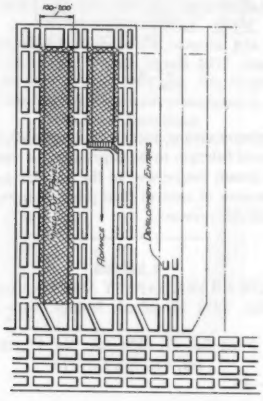
portions of the rectangular framework on opposite sides of the lounge and the transversely extending connecting means at the upper ends of the converging side support members.

4,268,088

SHORTWALL MINING OF TRONA

Herbert S. Price, and Glen E. Hunter, both of Green River, Wyo., assignors to Texasgulf Inc., Stamford, Conn.

Filed Oct. 1, 1979, Ser. No. 80,271
Int. Cl.³ E21C *41/08*
U.S. Cl. 299—11 **11 Claims**



1. A method of extracting trona ore from an underground formation which includes a trona bed located between layers of shale comprising the steps of:

(a) driving a first entry into said trona bed to a predetermind length,

(b) locating a second entry from said first entry at a distance less than that of the pressure arc that forms over the mined out cavity and at a distance substantially less than the length of said first entry,

(c) driving a second entry into said trona bed substantially parallel to said first entry to a predetermined length substantially equal to that of said first entry,

(d) connecting said first and second entries with a passage means thereby defining the trona bed to be mined,

(e) supporting the upper section of said connecting passage means generally adjacent the path of said trona bed to be mined,

(f) mining a strip of said trona bed between said first and second entries in a direction substantially parallel to said connecting passage and removing the recovered trona ore from the underground formation, and

(g) repeating said steps (e) and (f) until said defined trona bed is substantially mined.

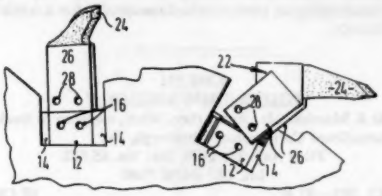
4,268,089

MOUNTING MEANS FOR PICK ON MINING DRUM VANE

Adam M. Spence, Doncaster, and James R. Goff, Brockenhurst, both of England, assignors to Winster Mining Limited, England

Filed May 30, 1979, Ser. No. 43,774
Claims priority, application United Kingdom, May 31, 1978, 25127/78
Int. Cl.³ E21C *35/18*
U.S. Cl. 299—87 **3 Claims**

1. In a cutting drum for a mining machine, said cutting drum having at least one helically-extending vane from which mining picks extend, the improvement wherein the vane is provided at spaced intervals around its periphery with recesses within each of which recess there is secured a mounting device, the mounting device comprising a central mounting plate which extends in the circumferential direction of the vane, and front and rear end plates at opposite ends of the mounting plate which extend across the mounting plate, said front and rear end plates being secured to opposed faces of the vane bounding the recess, the end plates providing respectively rearwardly



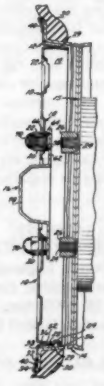
and forwardly facing abutment surfaces on both sides of the mounting plate, a pick box being releasably mounted on each mounting device, each pick box comprising opposed side walls which straddle the central mounting plate and which each have end faces which extend in closely abutting relationship with the abutment surfaces provided by the end plates, and each pick box carrying, releasably secured between said opposed side walls, a cutting pick.

4,268,090

IMBALANCE COMPENSATING VEHICLE WHEEL ATTACHMENT

Kim E. Rush, Irvine, Calif., assignor to William McCahill and Barbara L. Anderson, both of Huntington Beach, Calif., part interest to each

Filed Jun. 9, 1980, Ser. No. 157,547
Int. Cl.³ B60B *7/04, 13/00*
U.S. Cl. 301—5 BA **11 Claims**



1. An imbalance compensating vehicle wheel attachment comprising:

a rim structure adapted for mounting to a vehicle wheel which mounts a tire;

hub structure located centrally of said rim structure and adapted for static axial alignment of its center of gravity with the center of gravity and axis of rotation of the wheel and tire combination;

a plurality of sectors circumferentially arranged about and radiating outwardly from said hub structure, the radially outwardly located extremities of said sectors being resil-

iently coupled to said rim structure whereby said sectors are adapted for resilient radial movement relative to said rim structure; and

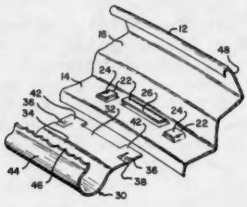
mounting means coupling the radially inwardly located extremities of said sectors to said hub structure, said mounting means enabling radial slidable movement of said sectors relative to said hub structure whereby, on rotation of the wheel and tire combination, said hub structure and each of said sectors are adapted to move radially independently of each other thereby to establish a radius of gyration tending to compensate dynamically for a wheel imbalance.

4,268,091

WHEEL TRIM ASSEMBLY

Claude J. Marshall, Jr., Ann Arbor, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Aug. 10, 1979, Ser. No. 65,632
Int. Cl.³ B60B *7/00*
U.S. Cl. 301—37 R **10 Claims**



1. A wheel trim assembly for disposition on the axial outer face of a vehicle wheel having a wheel flange; said wheel trim assembly being of the type comprising an annular ring having a rim portion disposed in a plane substantially parallel to the plane of said wheel flange; said rim portion having formed on the outer surface thereof a plurality of receptacles each of which slidably receive a spring retention clip for mechanically interlocking said spring retention clip to said annular ring; said spring retention clip being engageable with said wheel flange for mounting said wheel trim assembly on said wheel; said receptacle including two opposed circumferentially facing tabs and an axial inwardly facing stop tab all formed by upsetting said tab material from said annular ring; said spring retention clip having an arcuate base portion whose arc corresponds generally to the arc of the outer surface of said annular ring; said base portion of said spring retention clip being received by said receptacle; said stop tab capturing said base portion of said spring retention clip along its radially inwardly facing end.

4,268,092

HYDRAULIC BRAKING SYSTEMS

Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Warwickshire, England

Filed May 25, 1979, Ser. No. 42,555
Claims priority, application United Kingdom, May 31, 1978, 25730/78
Int. Cl.³ B60T *8/22*
U.S. Cl. 303—22 R **7 Claims**

1. A vehicle braking system pressure regulator through which fluid under pressure is supplied to actuate wheel brakes and which includes means to limit brake pressure to a proportion of applied pressure dependent on the vehicle loading, said regulator comprising:

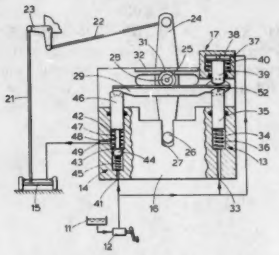
a housing;

a beam member pivotally located in said housing;

first piston means located in the housing to act on the beam member and to subject said beam member to the effect of brake pressure;

second piston means located in the housing to act on the beam member and to subject said beam member to the effect of applied pressure up to a given value and to a fixed proportion of applied pressure thereafter;

a fulcrum member supported by said housing and providing a fulcrum for said beam member intermediate said first and



second piston means, means being provided for the position of said fulcrum to be dependent on vehicle loading;

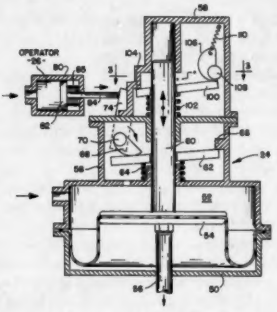
and valve means responsive to the angular position of said beam member to control fluid pressure in the regulator to control brake pressure.

4,268,093

AIR BRAKE SAFETY MECHANISM

Zdenek Müller, 2032 Kingsford, Sydney, New South Wales, Australia

Filed Jul. 13, 1979, Ser. No. 57,275
Int. Cl.³ B60T *17/16*
U.S. Cl. 303—89 **10 Claims**



1. A fluid-operated braking mechanism for a vehicle comprising: a brake chamber; a movable member mounted in said brake chamber and responsive to a fluid pressure introduced into said brake chamber for setting the brakes of the vehicle; a rod coupled to said movable member and extending along a particular axis for movement in both directions along said axis; supporting means; a latching member mounted on said supporting means having an aperture therein through which said rod extends; operator means mounted on said supporting means and engaging said latching member to cause said latching member to assume a first angular position during normal operation of said braking mechanism in which said rod moves freely in both directions along said axis through said aperture, and for causing said latching member to assume a second angular position during abnormal operation of said braking mechanism to cause said latching member to assume a second angular position in which said rod is prevented thereby from moving along said axis in one direction; a second latching member mounted on said supporting means and spaced along said particular axis from said first-mentioned latching member

and having an aperture therein through which said rod extends; spring means mounted on said supporting means for biasing said second latching member to a first angular position in which the rod moves freely in both directions along said axis through the aperture therein; and manually operated means for moving said second latching member to a second angular position in which said second latching member engages said rod and for moving said second latching member and said rod axially along said axis from a first axial position to a second axial position along said axis and in a particular direction.

4,268,094

RADIAL AND THRUST-TYPE HYDRODYNAMIC BEARING CAPABLE OF ACCOMMODATING MISALIGNMENT

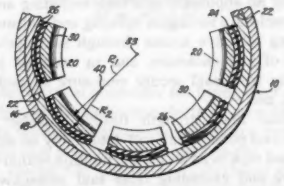
Jerome Greene, 1608 Comanche Rd., Arnold, Md. 21012

Continuation of Ser. No. 757,323, Jan. 6, 1977, abandoned. This application Jul. 30, 1979, Ser. No. 62,030

The portion of the term of this patent subsequent to Jan. 6, 1993, has been disclaimed.

Int. Cl.[3] **F16C** *7/04, 17/03, 17/06, 27/06*

U.S. Cl. 308—9 **5 Claims**



1. A fluid film bearing assembly comprising:

(a) a plurality of bearing pads disposed in a cylindrical array disposed about a longitudinal axis;

(b) pad support areas located beneath each pad;

(c) the bearing pads each comprising:

(i) a face portion having a curved bearing surface facing generally towards said axis, and a spherically curved rear surface facing a concentric surface of a respective bearing support area, the concentric surfaces defining interface surfaces having a center of curvature located between said axis and said bearing surface;

(ii) alternate layers of laminated elastomer-inelastic material between and coextensive with the interface surfaces, the material being bonded to the interface surfaces and being compliant in directions along the interface surfaces but rigid in a radial sense with respect thereto, so that the face portion is supported upon and secured to a respective pad support area by said material in a manner that positively restricts the freedom of motion of said face portion to swinging movement relative to the pad support area in a plurality of directions about a swing center corresponding to said center of curvature during bearing operation, and said material provides an elastic restoring force that resists such swinging movement; and

(d) the bearing surfaces of the pads having a common center of curvature located on said longitudinal axis.

4,268,095

MAGNETIC BEARING

Alan R. Millner, Lexington, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Dec. 1, 1978, Ser. No. 965,234

Int. Cl.[3] **F16C** *39/06*

U.S. Cl. 308—10 **11 Claims**

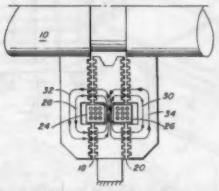
1. A magnetic bearing comprising:

a magnetically permeable central element having a magnet mounted on said central element,

outside magnetically permeable elements, movable relative to said central element, located on either side of said central element, forming air gaps between said central element and said outside elements,

said magnet having a single magnetic axis parallel to said air gaps and being arranged to create parallel magnetic circuits, one across each said gap, to exert magnetic forces between said central element and said outside elements,

two parallel electrical conductors, located on opposing sides of said magnet, both arranged to carry current in the same direction and perpendicularly to the magnetic axis of said



magnet, said conductors having electrical connection means for connection to a source of voltage so that when so connected and conducting current, said conductors create magnetic fields that oppose each other in the vicinity of said magnet, add to the strength of the magnetic field across one of said gaps, and subtract from the strength of the magnetic field across the other of said gaps to adjust the relative magnetic forces created by said permanent magnet between said central and said outside elements.

4,268,096

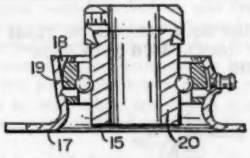
FLANGE MOUNT FOR SPHERICAL BEARING

Earl S. Cain, Portola Valley; Jerome A. Carlson, Woodside, and George E. Goodrich, San Carlos, all of Calif., assignors to Tribotech, Redwood City, Calif.

Continuation of Ser. No. 743,923, Nov. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 664,164, Mar. 5, 1976, Pat. No. 4,033,641. This application Apr. 17, 1978, Ser. No. 897,757

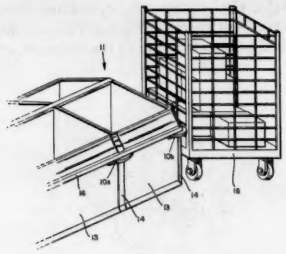
Int. Cl.[2] **F16C** *35/12*

U.S. Cl. 308—15 **6 Claims**



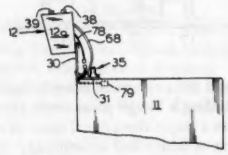
1. A flange mount for a spherical bearing having a spherical outer surface including a flange plate and a bearing receiving flange formed from a single sheet metal piece of predetermined thickness and each of which has substantially the same thickness as said sheet metal with said bearing receiving flange extending outwardly from only one face of said flange plate and adapted to receive and hold the bearing therein, said bearing receiving flange having spherical inner and outer surface portions spaced from the one face of the flange plate, said spherical inner surface defining a re-entrant surface adapted to receive and contact substantially the entire outer surface of said spherical bearing to support the bearing so that it cannot move radially or axially in either direction within the bearing receiving flange and yet permits the bearing axis to rotate, the other face of said flange plate defining a mounting surface substantially perpendicular to the axis of said bearing receiving flange for mounting the flange on a supporting surface.

4,268,097
CABINET MOLDING PROTECTOR
James Woodard, 5470 Glore Dr., Mableton, Ga. 30059
Filed Feb. 14, 1979, Ser. No. 2,402
Int. Cl.[3] B65D *85/48*; E04B *7/00*
U.S. Cl. 312—137 5 Claims



1. In combination with a cabinet including two adjacent wall panels defining a vertical seam between said panels and a strip of vertical molding covering the seam, and a strip of horizontal molding intersecting the strip of vertical molding, a molding protector comprising a rigid, generally arcuate shaped rail member attached to said cabinet in a horizontal attitude beneath said strip of horizontal molding and spanning said strip of vertical molding, said rail member including a first end approaching one of said adjacent wall panels beneath said strip of horizontal molding on one side of said strip of vertical molding forming an obtuse angle of approach with the outer surface of said one wall panel, and a second end approaching the other of said adjacent wall panels beneath said strip of horizontal molding on the other side of said strip of vertical molding forming an abtuse angle of approach with the outer surface of said other wall panel, and the central portion of said strip protruding out from beneath said strip of horizontal molding and spanning said strip of vertical molding.

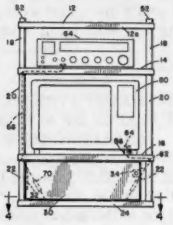
4,268,098
RETAINING CLIP FOR REMOVABLE CABINET FOR FRONT-SERVICEABLE APPLIANCES
Gerald L. Kretchman, and Robert M. Weir, both of St. Joseph, Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.
Filed Sep. 4, 1979, Ser. No. 72,443
Int. Cl.[3] A47B *81/00, 97/00*
U.S. Cl. 312—210 8 Claims



1. In a domestic appliance having a cabinet including a rear panel, a top, a wrapper joined to said top, and a base, a retaining clip for maintaining said cabinet in assembled relationship, said retaining clip comprising:

connecting means for joining said cabinet top to said rear panel, said connecting means including biasing means for urging said top into contact with said rear panel and for biasing said wrapper into contact with said base, said biasing means acting through said top and said back panel to create said wrapper base contact.

4,268,099
SECURE EQUIPMENT RACK
Jack L. Clausen, 7404 Monte Vista Ave., La Jolla, Calif. 92037
Filed Jul. 9, 1979, Ser. No. 56,045
Int. Cl.[3] E05B *73/00*
U.S. Cl. 312—280 12 Claims

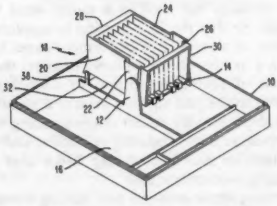


1. A security mounting system for securing appliances against theft comprising in combination:

a supporting rack having at least one mounting position for mounting an appliance, said rack including an accessible secure enclosure having an opening and a closure member providing selective access through said opening to the interior of said enclosure, and an enclosed passageway extending from said secure enclosure to said mounting position, and

an elongated high strength flexible member extending through said passageway and detachably securable at one end to said rack in an accessible position within said secure enclosure and extending from said passageway at said mounting position for detachably securing the other end to an appliance so that said other end is non-accessible when said one end is secured in position in said enclosure.

4,268,100
PIVOTALLY MOUNTED PRINTED CIRCUIT BOARD HOLDER
Dennis H. Kekas; Ronald P. McAdams, and Alexander Polischuk-Sawtschenko, all of Raleigh, N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jan. 5, 1979, Ser. No. 1,102
Int. Cl.[3] H05K *7/16*
U.S. Cl. 339—17 LM 9 Claims



1. For use in an electronic data processing device having a base, a holder for printed circuit boards comprising:

first and second support members extending upwardly from the base, each of said support members having a stop member and an inwardly extending stud, said studs being aligned along a common axis;

a generally rectangular receptacle having opposed end walls, opposed side walls and a bottom wall, each of said sidewalls further including a recessed panel parallel to but displaced outwardly from the remainder of the side wall and having an opening therein for receiving one of the inwardly extending studs on the support members, said

receptacle being pivotable from a normal position in which the bottom wall is approximately parallel to but spaced above the base to a service position delimited by the stop members on said support members, the bottom wall being approximately perpendicular to the base in the service position; and

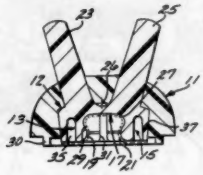
latching means for releasably holding said receptacle in the normal position.

4,268,101

INTEGRAL DOME AND COLLAR ELECTRICAL CONNECTOR

Robert D. Stone, 3050 S. Bristol 8N, Santa Ana, Calif. 92704

Filed Aug. 15, 1979, Ser. No. 66,564
Int. Cl.³ H01R *11/22*
U.S. Cl. 339—61 R **9 Claims**



1. A female electrical connector for fitting over a vertically elongated, electrically conductive electrode stem formed on its top extremity with an enlarged-in-cross section button having a rounded top end, said connector comprising:

a hollow electrically conductive cylindrical cap formed with a stem-receiving chamber for telescoping over said stem and including a flexible top wall and a downwardly projecting barrel split longitudinally along its diametrically opposite sides to form opposed axially projecting semicylindrical skirts, said skirts being formed on their free extremities with radially inwardly projecting collars for fitting radially inwardly under the opposite sides of such button to releasably lock said cap on such stem, said collars tapering upwardly and radially inwardly to form respective downwardly facing cam surfaces, said top wall having a relaxed position and being sufficiently flexible to enable its laterally opposite sides disposed on the opposite sides of the axial plane of the splits in said barrel to be angled upwardly and outwardly from such plane of said splits to a pinch-release position angling said skirts downwardly and radially outwardly at an angle sufficient to space said collars a radial distance outwardly from one another to cause the radial inner peripheries thereof to clear the opposite sides of said button;

laterally spaced apart elongated finger grasp ears mounted on said top wall on the lateral opposite sides of such plane of said splits and projecting longitudinally upwardly for being grasped and on their upper extremities and pinched together to flex said top wall to said pinch-release position; and,

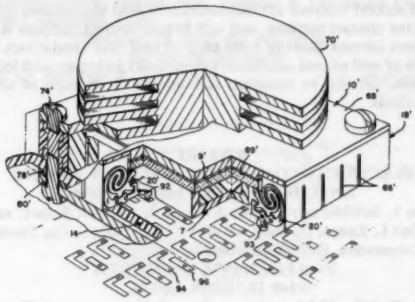
an electrical lead leading from said top wall whereby when it is desirable to snap said cap onto said button, it may be pressed thereagainst from an axial direction causing said cam surfaces of said respective collars to engage the opposite sides of said top end of said button to thus cause said collars, and consequently, the lower extremities of said skirts to be spread radially apart and when said collars clear said button said top wall will flex to said relaxed position to urge such bottom extremities of said skirts radially inwardly to snap said collars radially inwardly under the opposite sides of such button and when it is desirable to pinch release said connector from such stem, the free extremities of said ears may be pinched together to cause said top wall to flex to said pinch-release position to spread said collars apart to clear the exterior dimension of said button.

4,268,102

LOW IMPEDANCE ELECTRICAL CONNECTING MEANS FOR SPACED-APART CONDUCTORS

Dimitry G. Grabbe, Lisbon Falls, Me., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 4, 1979, Ser. No. 81,719
Int. Cl.³ H01R *9/09*
U.S. Cl. 339—75 M **8 Claims**



1. A multi-contact electrical connector for electrically connecting a first plurality of electrical conductors to a second plurality of electrical conductors with individual conductor-to-conductor connections, said first plurality of conductors having spaced-apart side-by-side first conductor contact surfaces, said second plurality of conductors having spaced-apart side-by-side second conductor contact surfaces, said first conductor contact surfaces being opposed to, and spaced from, said second conductor contact surfaces, said electrical connector comprising:

a plurality of flat stamped one-piece contact terminals of conductive resilient metal, each of said terminals having all parts thereof lying in a single plane and having first and second contact portions which are adjacent to each other, first and second terminal contact surfaces on said first and second contact portions respectively, said terminal contact surfaces facing in opposite directions, first and second bypass contact surfaces on said first and second contact portions respectively, said first and second bypass contact surfaces facing each other, said first and second terminal contact surfaces being remote from each other and said first and second bypass contact surfaces being proximate to each other, said bypass contact surfaces being between said first and second terminal contact surfaces,

each of said terminals having integral spring loop means extending circuitously and laterally between said first and second contact portions, said loop means being resiliently deformable upon movement of said first and second contact portions relatively towards each other, said first and second bypass contact surfaces being movable against, and relatively over, each other upon movement of said first and second contact portions relatively towards each other,

housing means for said terminals, said housing means having a plurality of side-by-side terminal-receiving cavities, each of said terminals being received in one of said cavities with said terminal contact surfaces of each terminal being normally disposed outside of said housing means, said cavities comprising narrow slots which support said terminals against buckling and leave said spring loop means free to deflect along their entire lengths, and

conductor supporting and moving means for supporting said

first conductor contact surfaces against said first terminal contact surfaces, for supporting said second conductor contact surfaces against said second terminal contact surfaces, for moving said first conductor contact surfaces relatively towards said second conductor contact surfaces, and for holding said conductor contact surfaces in their moved positions whereby,

during movement of said conductor contact surfaces towards said second conductor contact surfaces, said loop means will be resiliently deformed and will impose contact forces which will maintain said bypass contact surfaces against each other, which will maintain said first terminal contact surfaces against said first conductor contact surfaces, and which will maintain said second terminal contact surfaces against said second conductor contact surfaces, and said bypass contact surfaces will permit current flowing from each of said first conductors to each of said second conductors electrically to bypass said loop means, thereby to minimize self-inductance in each of said terminals.

4,268,103

ELECTRICAL CONNECTOR ASSEMBLY HAVING ANTI-DECOUPLING MECHANISM

Alan L. Schildkraut; Vincent A. Luca, Jr., both of Sidney, and Carl L. Knapp, Oneonta, all of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Feb. 2, 1979, Ser. No. 8,714
Int. Cl.³ H01R *13/639*
U.S. Cl. 339—89 M **9 Claims**

1. An electrical connector assembly comprising:

a first electrical connector shell having an insert with a plurality of axial passages having electrical contacts mounted therein;

a second shell having an insert with a plurality of axial passages extending therethrough and a plurality of electrical contacts matable with the contacts in the first shell, said second shell having an external thread thereon;

a coupling nut for selectively coupling and maintaining said first and second shells together and holding said respective contacts together in a mated relationship, said coupling nut being mounted for rotational movement on the first shell with internal thread means connectable with the threads on the second shell for connecting the first and second shells together in a mated relationship; and

means for retarding the rotational movement of the coupling nut with respect to the shells, said retarding means comprising:

an annular shoulder mounted on one of the shells and extending radially outward from the one shell toward the coupling nut, said annular shoulder provided with teeth on the outside surface thereof; and

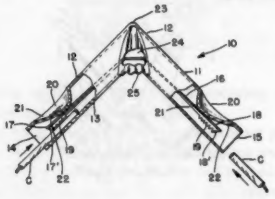
an elongated spring having a pair of ends, one end having a looped end portion for pivotal mounting of said spring to the coupling nut and the other end resting freely on an interior portion of the coupling nut spaced from the one end mounting the spring to the coupling nut, said spring comprising a plastic member and a metallic member, said plastic member including said looped end portion and having a plastic surface facing in the direction of said teeth, said metallic member including an arcuately-shaped portion in which at least a portion of said looped plastic end portion is mounted, said plastic surface including an integrally molded enlarged portion that extends inwardly in a radial direction from an imaginary straight line between the ends of said spring to the coupling nut towards the shell for engaging the teeth to retard rotational movement.

4,268,104

ELECTRICAL CONNECTOR

Kent A. Kidder, 6505 Salem, Apt. 107, Lubbock, Tex. 79414

Filed Apr. 1, 1980, Ser. No. 136,387
Int. Cl.³ H01R *11/20, 13/15*
U.S. Cl. 339—98 **15 Claims**



1. An electrical connector comprising an elongated hollow tube having opposite sides and opposite open ends, and an elongated electrically conductive metal strap extending longitudinally within said tube and having opposite end portions terminating short of the opposite ends of said tube, a plurality of teeth projecting from each end portion of said strap on one side thereof facing one of the opposite sides of said tube and terminating short thereof, a pair of cam means projecting from the other side of said tube toward said one side, there being one of said pair of cam means located inwardly of each end of said metal strap and bearing on said strap, said tube having an intermediate opening formed in said one side and extending toward the other side around said tube leaving a connecting hinge in said other side about which the opposite ends of the tube are normally folded toward each other on the side of said opening, forming an angle between said ends of substantially less than 180° in which position said connector is adapted for the insertion of conductors through the opposite open ends of said tube into the space between the toothed end portions of said strap and said one side, said cam means bearing upon said strap inwardly from said toothed end portions, said toothed end portions of said strap being slidable under said cam means as said tube is straightened into a linear form where said cam means force the toothed ends closer to said one side and thus cause the toothed ends of said strap to bite into said conductors.

4,268,105

TRANSIENT SUPPRESSION CONNECTOR

Henry J. Widmayer, San Jose, and Albert T. Cronin, Los Altos, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 9, 1979, Ser. No. 82,504
Int. Cl.³ H03H *7/00*
U.S. Cl. 339—147 R **1 Claim**

1. A transient suppression connector for suppressing cable induced transients comprising:

(a) an electrical connector at the end of an electrical cable, said electrical connector having a plurality of pins, said pins to be connected to an electronic circuit board within an electronics package case;

(b) a connector adaptor in the form of a cup having a connector hole in the base and a flange at the rim for attach-

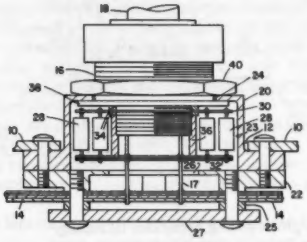
ment to said package case, said adaptor forming a cavity about said electrical connector;

(c) an adaptor plate having a central hole through which said pins protrude and having means for attaching to said connector adaptor and said electronic circuit board;

(d) means for attaching said adaptor housing to said electronics package case and to said electronic circuit board;

(e) a plurality of transient suppression components situated within said cavity about said electrical connector;

(f) a ground plane to which one end of each of said transient suppression components is connected;



(g) an adaptor circuit board having an electronic circuit pattern to which the other end of each of said transient suppression components is connected and to which said pins are connected;

(h) a washer about said electrical connector on each side of said ground plane; and

(i) a retaining nut which threadedly engages the end of said electrical connector and abuts said washer on the underside of said ground plane with sufficient force to maintain electrical contact between said ground plane and said adaptor housing thereby forming a minimum inductance transient suppression electrical circuit between said package case and said pins.

4,268,106

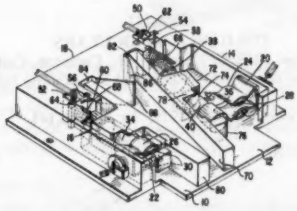
FUSE HOLDER ASSEMBLY

Manfred Moerre, Warren, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,669

Int. Cl.[3] H01H *85/22*

U.S. Cl. 339—147 R **4 Claims**



1. A fuse holder assembly for a cartridge type fuse comprising:

a support member formed with a side wall and a rear wall;

a fuse clip mounted on the side wall of said support member;

a spring contact member mounted on said support member and spaced from said fuse clip so that a cartridge type fuse may have the spring contact member bearing against one end and the other end held by said fuse clip;

an elongated fuse carrier bar having a containment portion projecting therefrom and adapted to receive therein an intermediate portion of a cartridge type fuse; and

a fuse carrier bar holder mounted on said support member in a location proximate said spring contact member, said holder being formed as a recess in the rear wall of said support member and adapted to receive an end of said carrier bar and allow pivotal motion of said carrier bar so that a fuse within the containment portion of said carrier bar may have a first end brought against said spring contact member and the second end pivoted into engagement with said fuse clip.

4,268,107

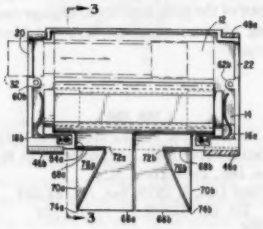
FUSE HOLDER

Manfred Moerre, Warren, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 30, 1979, Ser. No. 89,671

Int. Cl.[3] H01H *85/22*

U.S. Cl. 339—147 R **10 Claims**



1. A fuse holder for a cartridge type fuse comprising:

a housing having a fuse transfer region and a fuse contact region laterally spaced apart within said housing;

means for providing access between the exterior of said housing and said fuse transfer region, including a first opening formed in said housing through which a cartridge type fuse may pass in an axial direction; and

carrier means captured within said housing for moving a fuse between said fuse transfer region and said fuse contact region;

said housing being formed with a second opening and said carrier means including a handle portion extending through said second opening, whereby movement may be imparted to said carrier means from outside said housing.

4,268,108

LOCKING ARRANGEMENT FOR FIXING A TERMINAL BLOCK

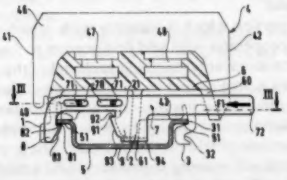
Jean Debaigt, Maisons Laffitte, France, assignor to CGEE Alsthom, Levallois-Perret, France

Filed Oct. 30, 1979, Ser. No. 89,393

Claims priority, application France, Nov. 6, 1978, 78 31308

Int. Cl.[3] H01R *9/26*

U.S. Cl. 339—198 GA **8 Claims**



1. A locking arrangement for locking a terminal block to a supporting channel section, the terminal block having a base including fixing means for fixing the terminal block to two different kinds of supporting channel, namely a first kind hav-

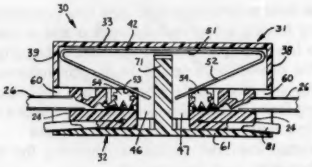
ing outwardly turned rims and a second kind having inwardly turned rims; the fixing means including a first fixing tab for co-operating with an outwardly turned rim, a second fixing tab for co-operating with an inwardly turned rim, and a third fixing tab for co-operating with either kind of rim, such that the block is fixable to either kind of supporting channel by means of the third fixing tab and the appropriate one of the first and second fixing tabs for the kind of supporting channel in question, each fixing tab including a notch for receiving a rim of at least one kind of supporting channel, and the fixing means as a whole including sufficient resilience for the block to be snap fitted to a supporting channel wherein the locking arrangement comprises guide means on said terminal block and a locking plate disposed in said guide means for movement transversely with respect to a supporting channel section when said channel is fixed in the fixing means, said locking plate having lock notches arranged to reinforce the action of the notches in at least some of the tabs, the guide means being arranged to allow at least one of the lock notches to engage one of the rims of a supporting channel once the terminal block has been snap-fitted thereto.

4,268,109

COUPLER FOR TELEPHONE CORDS

Edwin C. Hardesty, Perry Hall, Md., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Oct. 3, 1979, Ser. No. 81,604
Int. Cl.³ H01R *13/15, 13/514*
U.S. Cl. 339—205 **7 Claims**



1. A coupler for connecting telephone cords, which are terminated with modular plugs, said coupler comprising:

a first portion which is made of a dielectric material and which includes a base and opposed walls upstanding from sides and ends of said base, said first portion having a plurality of partitions that extend from one end to the other and form compartments that have a predetermined spacing, each of said partitions including a stem portion extending away from said base;

wire-like contact elements positioned between adjacent partitions, each said contact element having a linear portion which is adjacent to said base of said first portion and having retroflexed free end portions, said linear and said retroflexed portions of each said contact element being maintained at said predetermined spacing by said partitions; and

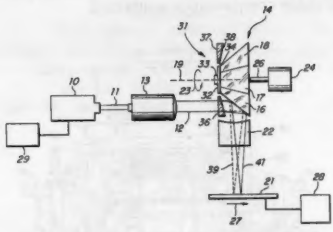
a second portion which is mateable with, which covers, and which cooperates with said first portion to form an externally communicating cavity at each end of the coupler for receiving a plug having terminals mounted therein at said predetermined spacing that engage said contact elements, said second portion including means for supporting said stem portions of said partitions in said first portion at said predetermined spacing to maintain said retroflexed portions of said contact elements at said predetermined spacing to facilitate their engagement by terminals of plugs which are inserted into said cavities and for maintaining said linear portions of said contact elements adjacent to said base of said first portion.

4,268,110

FACET ANGLE CORRECTOR FOR MULTI-FACETED OPTICAL SCANNER

Peter W. Ford, Winchester, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Oct. 12, 1979, Ser. No. 84,275
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.7 **10 Claims**



1. In a light scanning apparatus including:

a. means for providing a light beam;

b. beam deflector means positioned in the path of said light beam, said beam deflector means including a plurality of beam deflecting faces; and

c. drive means for moving said beam deflector means to sequentially move said plurality of beam deflecting faces across said light beam to effect the scanning thereof; the improvement comprising

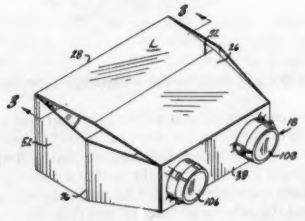
d. corrector means for correcting said light scanning apparatus for misalignment of said plurality of beam deflecting faces, said corrector means including a plurality of transparent optical elements in the path of said light beam, each of said plurality of transparent optical elements being associated with a different one of said plurality of beam deflecting faces and comprising an optical wedge means for bending said light beam through a given angle prior to the light beam impinging upon the associated beam deflecting face to compensate for said misalignment of said associated beam deflecting face, and wherein said corrector means further includes means for individually adjusting each of said optical wedge means for controlling the angle at which said light beam passing therethrough is bent.

4,268,111

FOLDABLE BINOCULARS

John R. Green, 3105 E. Harcourt St., Compton, Calif. 90221, and Charles D. Turner, 48 Eastfield Dr., Rolling Hills, Calif. 90274

Filed Aug. 27, 1979, Ser. No. 70,141
Int. Cl.³ G02B *23/18*
U.S. Cl. 350—70 **6 Claims**



1. A foldable binocular, comprising: a case having a front wall formed with a pair of objective lens apertures, top and

bottom walls integrally connected to the upper and lower edges of said front wall, with the upper rear edge of said top wall being integral with the upper edge of an inside rear wall and the lower rear edge of said bottom wall being integral with the lower edge of an outer rear wall, left and right side walls integrally connected to the side edges of said front wall, with the rear edges of each side wall being formed with an end wall, all of said walls being formed from a single blank, with the adjoining edges between each of said walls defining fold lines and with the intermediate portion of each of said top and bottom walls being formed with a horizontal transverse adjustment fold line and the intermediate portion of each of said side walls being formed with a vertical adjustment fold line;

eyepiece lens apertures formed in said rear walls and said end walls, with said inner and outer rear walls being butted together and said end walls being butted against the inner surface of said inner rear wall so as to place the eyepiece lens apertures in coincidence and in longitudinal alignment with said objective lens apertures;

objective lens means attached to said front wall having a pair of objective lenses covering said objective lens apertures; and

eyepiece lens means attached to said rear walls having a pair of eyepiece lenses covering said eyepiece lens apertures, with focus adjustment of said lens being provided by a longitudinal folding of said top, bottom and side walls about said intermediate fold lines, and with said intermediate fold lines also permitting said front and rear walls to be collapsed together and maintaining their parallelism.

4,268,112

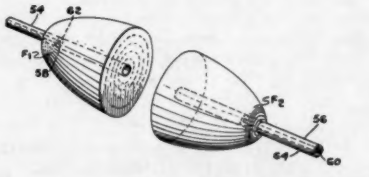
FIBER OPTIC CONNECTOR USING GRADIENT INDEX LENSES

Kenneth P. Peterson, Stamford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation of Ser. No. 797,969, May 18, 1977, abandoned. This application May 11, 1979, Ser. No. 37,974

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.18 **9 Claims**



3. An optical fiber connector for attachment to the end of an optical fiber to enable connection of that optical fiber to another optical fiber, the optical fiber connector comprising an optical lens means, wherein said optical lens means is substantially one-half of a solid elliptical bead of glassy material, having:

an optical axis;

a focal point at a first location on said optical axis;

a connector face that intersects said optical axis at a second location spaced from said first location for contacting and being secured directly to a corresponding connector face of a second optical lens means;

a non-uniform index of refraction formed and arranged for controllably expanding energy received at said focal point on said optical axis, said energy being expanded radially about said optical axis and emerging from said connector face in rays parallel to said optical axis, and for controllably focusing energy received by said connector face in rays parallel to said optical axis radially towards said focal point, wherein the index of refraction decreases from the center of said bead toward the outer surface of said bead; and

attachment means for attaching the end of an optical fiber core to said optical lens means at said focal point.

4,268,113

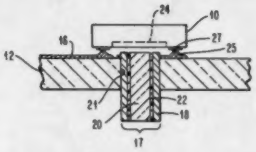
SIGNAL COUPLING ELEMENT FOR SUBSTRATE-MOUNTED OPTICAL TRANSDUCERS

Francis E. Noel, Jr., Knightdale, N.C., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 16, 1979, Ser. No. 30,401

Int. Cl.³ G02B 5/14, 27/00

U.S. Cl. 350—96.20 **2 Claims**



1. In the combination of an optical transducer and a supporting insulative substrate, wherein said substrate has at least one aperture therethrough aligned with the transducer, an improved signal coupling element comprising:

a hollow metal pin extending through the substrate aperture and being secured therein by an interference fit between the exterior surface of said metal pin and the aperture walls;

an optical fiber for transmitting light through the the center of said metal pin, one end of said fiber being adjacent an active region of the transducer;

means for providing an electrical connection between said metal pin and the transducer, said means including an electrically conductive annular button encircling and in conductive contact with said metal pin, said button being on the opposite side of the substrate from the transducer and having a bore therethrough aligned with said optical fiber, the bore having a first cylindrical segment having a diameter approximately equal to the outer diameter of said metal pin and a second coaxial segment which flares from a minimum diameter adjacent the bottom end of said first cylindrical segment to a maximum diameter at one surface of said button.

4,268,114

OPTICAL CONNECTOR FOR PRINTED CIRCUIT CARD

Luigi d'Auria, and Philippe Maillot, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 28, 1979, Ser. No. 70,495

Claims priority, application France, Sep. 1, 1978, 78 25289

Int. Cl.³ G02B 5/14

U.S. Cl. 350—96.20 **5 Claims**

1. An optical connector for use in the wall of an enclosure optically coupling a circuit card optical terminal with a cable terminal comprising:

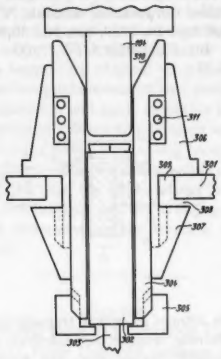
a connector body having a bore therethrough for receiving at one end thereof the circuit card terminal and at the other end thereof the cable terminal;

a sleeve into which the body is slidably positioned, the sleeve including first and second members configured so as to define a groove for engaging the wall of the enclosure, the groove providing lateral clearance of the connector with respect to the wall to permit, by lateral movement of the connector, axial alignment of the connector with the circuit card terminal;

a spring for biasing the body, with respect to the sleeve, in the direction of the circuit card terminal; and

a retaining ring for limiting the movement of the body under the bias of the spring,

the dimensions and positions of all elements being selected such that in its extreme position, the body places the cable terminal beyond the limit position of the circuit card terminal to be engaged, so that the circuit card terminal, when received within the body must displace the cable terminal and body so as to increase the compression of the spring,



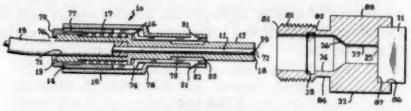
the spring constant of the spring being selected such that the force of the spring is greater than the frictional force of the terminal of the printed circuit board within the body so that during its engagement within the body, the circuit card terminal forces back the body by its pressure on the cable terminal and not by its friction with the body.

4,268,115

QUICK-RELEASE FIBER-OPTIC CONNECTOR

Charles S. Slemon, and Steven W. Braun, both of Encinitas, Calif., assignors to Tetra-Tech, Inc., Pasadena, Calif.

Filed Jun. 1, 1979, Ser. No. 44,575
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.21 **9 Claims**



1. A connector, for use in presenting the tip of a sheathed optic fiber to a mating optical device for light transmission between such tip and such device, the connector comprising:

a fitting adapted to be affixed to such mating optical device;

a ferrule, adapted to be affixed to the end of such optic fiber, the ferrule defining:

a cavity which penetrates completely through the ferrule and is adapted to accept such fiber, whereby the tip of such fiber may be exposed flush with one end of the ferrule; and

a first spring anchor;

a connector body guiding the ferrule and having a quick-release connecting catch that is adapted to engage the fitting, whereby the connector body may be held in fixed relation to such mating optical device, the said catch comprising:

a hook which is carried by the connector body, formed to engage the fitting, and spring-loaded toward engagement with the fitting; and

manipulable means for retracting the hook, against the spring-loading, to disengage the hook from the fitting; the manipulable hook-retracting means comprising a housing which at least partly covers the connector body and is slidably mounted thereto, and which defines an aperture through which the hook extends;

the connector body being slit in such relation to the hook as to form a spring which urges the hook outward through such aperture and toward engagement with the fitting; and

the hook being shaped for retraction into the housing in response to sliding manipulation of the housing;

a second spring anchor secured to the connector body; and

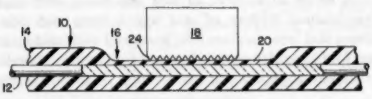
spring means engaging the two anchors and adapted to urge the said one end of the ferrule toward such mating optical device.

4,268,116

METHOD AND APPARATUS FOR RADIANT ENERGY MODULATION IN OPTICAL FIBERS

Donald Schmadel; William H. Culver, and Gordon Gould, all of Gaithersburg, Md., assignors to Optelecom Incorporated, Gaithersburg, Md.

Filed Oct. 26, 1979, Ser. No. 88,579
Int. Cl.³ G02B *5/14*; G02F *1/11, 1/29*
U.S. Cl. 350—96.29 **31 Claims**



1. Means for modulating radiant energy in a single mode clad optical fiber comprising:

a single mode optical fiber having a modulation control zone where the cladding is partially removed or formed with a decreased thickness relative to the remainder of the cladding;

an optical grating;

means for mounting the optical grating in the control zone with the crests of the optical grating positioned generally normal to the optical axis of the fiber; and

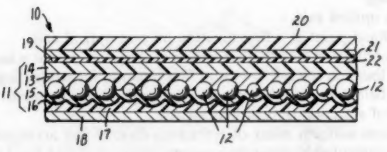
means for sliding the optical grating relative to the optical fiber to cause a narrow band of the radiant electromagnetic energy in the optical fiber to be modulated in phase and/or frequency.

4,268,117

SHEET ASSEMBLY FOR FORMING IMAGED RETROREFLECTIVE SHEETING

Charles V. Sevelin, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 30, 1979, Ser. No. 98,738
Int. Cl.³ G02B *5/128*
U.S. Cl. 350—105 **3 Claims**



1. Sheet assembly useful to form graphically imaged retroreflective markings comprising a base retroreflective sheeting that retroreflects light shined against its front surface, a film overlying and visibly distinctive from the front surface of the base retroreflective sheeting, a layer of pressure-sensitive adhesive disposed between the film and base retroreflective sheet-

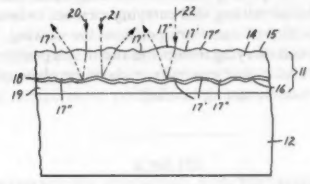
ing, and a heat-susceptible low-adhesion layer interposed between the layer of pressure-sensitive adhesive and either the film or base retroreflective sheeting, the low adhesion layer having low adhesion to the pressure-sensitive adhesive layer prior to heat-exposure of the assembly such that the assembly may be manually peeled apart at the interface between the low-adhesion layer and pressure-sensitive adhesive layer, but developing in combination with the pressure-sensitive adhesive layer a firm and long-lasting bond between the film and base retroreflective sheeting when the assembly is heated to an elevated temperature.

4,268,118

SHEETING USEFUL AS A PROJECTION SCREEN

Philip V. Palmquist, Maplewood, and Thomas I. Bradshaw, Afton, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 5, 1979, Ser. No. 72,661
Int. Cl.³ G03B *21/60*
U.S. Cl. 350—128 **8 Claims**



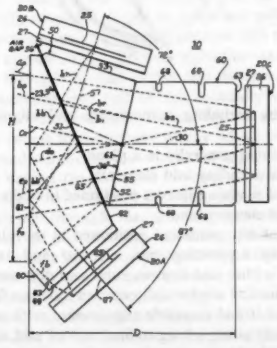
1. Sheeting useful as a durable projection screen from which images projected onto the front of the screen can be brightly reflected with good uniformity to a widely distributed audience, comprising (1) a transparent film that (a) is configured on its back surface with a random pattern of densely packed generally parallel elongated microscopic recesses or projections, which are concave or convex in both their longitudinal and transverse directions, and (b) is configured on its front surface with densely packed light-refracting lenticular recesses or projections that spread light entering and leaving said front surface, and (2) a specularly reflective layer coated on said back surface.

4,268,119

COLOR-SEPARATING OPTICAL SYSTEM

Rudolf Hartmann, Winter Park, Fla., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 22, 1979, Ser. No. 5,180
Int. Cl.³ G02B *7/18, 27/10*
U.S. Cl. 350—173 **8 Claims**



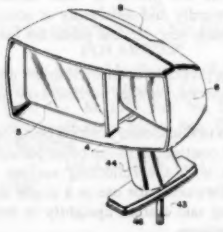
1. An optical system separating color components of light directed along a non-reflecting optical axis in a small portable video color camera, said system comprising a prism assembly including first and second and third prisms and having a light entrance face on said first prism, a first dichroic plate fixedly secured to said first prism and spaced from said second prism by an air gap for receiving light entering said first prism through said input face and selectively reflecting a first color component while transmitting remaining light components to said second prism, a second dichroic plate disposed between said second and third prisms and fixedly secured to each for selectively reflecting a second color component while transmitting the remaining light component to said third prism, three exit faces respectively disposed on said three prisms for respectively emitting light components therefrom along three exit paths each having an axis, three detectors respectively disposed adjacent to said three exit faces and each having an image area thereon for receiving light rays emitted from the associated exit face, and three positioning means each including a rigid body disposed between the associated detector and the corresponding exit face and secured to each fixedly to hold the associated detector in a predetermined position with respect to the associated exit face and its axis, each said rigid body having an opening therethrough to accommodate uninterrupted passage of light rays from the corresponding exit face to said image area of said associated detector.

4,268,120

AUTOMOBILE MIRROR DEVICE

Tsuneharu Jitsumori, 171 Oi, Seto-cho, Akaiwa-gun, Okayama-ken, Japan

Continuation of Ser. No. 911,120, May 31, 1978, abandoned. This application Oct. 3, 1979, Ser. No. 81,529
Claims priority, application Japan, Jun. 2, 1977, 52-72468; Apr. 25, 1978, 53-55148
Int. Cl.³ G02B *7/18*
U.S. Cl. 350—302 **1 Claim**



1. A multi-mirror device to be mounted on a vehicle for front and rear viewing on the side of a vehicle opposite to that of the driver's seat, said device comprising a casing having side walls, top and bottom walls, and a front wall, at least a portion of which is formed of a transparent material; a support bracket carried within said casing having a pair of support plates offset angularly relative to each other; a first rear view mirror and a front view mirror in alignment with the transparent portion of the front wall; a backing plate secured to the rear face of each of said rear view and front view mirrors, a hollow hemispheric projection on each of said backing plates in a direction away from the mirror surface, complementary hollow projections formed on each of said support plates, and means for resiliently and pivotably mounting said rear view and front view mirrors on respectives of said support plates, a third reflecting mirror mounted within said casing facing in a generally rearwardly direction and adapted to reflect the image of said front view mirror rearwardly, at least the transparent portion of said front wall of said casing being removably for manual manipulation of support plates and each of said mirrors and the rear edges of said side top and bottom walls extending rearwardly of said rear view mirror to shelter the same and permit access to said

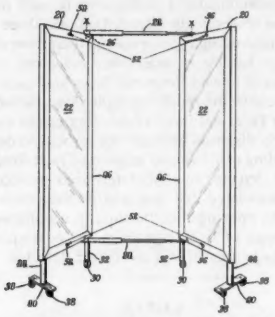
front and rear view mirrors for adjustment while being protected from the elements.

4,268,121

FULL VIEW DUAL-USE MIRROR APPARATUS

Samuel Peskin, 18700 Walkers Choice Rd., Gaithersburg, Md. 20760

Filed Apr. 28, 1980, Ser. No. 144,582
Int. Cl.³ G02B *7/18*
U.S. Cl. 350—306 **10 Claims**



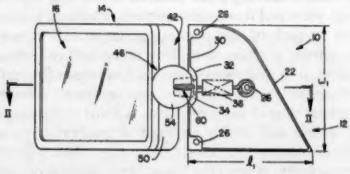
1. Full view dual-use mirror apparatus comprising:
a pair of upright rectangular frames each having a reflecting surface on the front side thereof;
said frames being interconnected by telescopically extendible and retractible rod means enabling said apparatus to be unfolded to a spread, open position and folded to a compact, closed position;
said frames when in said open position being spaced horizontally apart with the planes of their reflecting surfaces diverging forwardly and outwardly at acute angles relative to a common rear vertical plane for use as dual mirrors;
said frames being pivotally connected to the ends of said rod means about spaced, parallel vertical axes parallel to said vertical plane;
said frames when in said closed position being positioned one in front of and contiguous to the other parallel to said rear vertical plane with the reflecting surface of the front frame facing forwardly for use as a single mirror; and
means supporting said frames uprightly in both said open and closed positions.

4,268,122

OUTSIDE REAR VIEW MIRROR

Walter R. Deshaw, Sparta, Mich., assignor to Keeler Brass Company, Grand Rapids, Mich.

Filed Jun. 21, 1979, Ser. No. 50,703
Int. Cl.³ B60R *1/06;* G02B *5/08*
U.S. Cl. 350—307 **20 Claims**



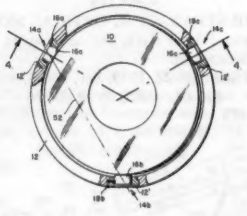
1. An adjustable breakaway rear view mirror support assembly for use with a vehicle, said mirror support assembly comprising:
a low profile mounting bracket adapted to be fixedly secured to the vehicle;
a mirror carrying member; and
means securing said mirror carrying member to said mounting bracket for permitting manual adjustment of the mirror carrying member for viewing purposes and for achieving breakaway action by permitting the carrying member to rotate to a position generally parallel to the mounting bracket when a force is exerted on the forward surface of the mirror carrying member, said means including:
one of said bracket and said member including a portion defining a concave bearing surface and the other of said bracket and said member including a portion defining a convex and at least partially spherical bearing surface engaging said concave surface, said surfaces dimensioned to permit rotation of said carrying member relative to said mounting bracket; and
tension spring means connected at one end to said mounting bracket and at the other end to said carrying member and being stretched between said bracket and said carrying member for pulling said surfaces into frictional engagement and permitting said carrying member to be adjusted to a plurality of stationary positions for viewing, yet permitting said carrying member to rotate to a position generally parallel to and generally in the same plane and envelope as said mounting bracket.

4,268,123

KINEMATIC MOUNT

Bernard Mesco, Playa Del Rey, CA, assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 26, 1979, Ser. No. 15,271
Int. Cl.³ G02B *7/02, 7/18*
U.S. Cl. 350—310 **10 Claims**

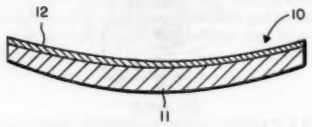


1. Apparatus including a mounting and aligning device comprising:
an element lying generally in a plane;
a support surrounding said element;
a plurality of retaining sleeves positioned in said support and about said element; and
a plurality of disc members positioned in the plane of and engageably supporting said element and respectively mounted within said sleeves, each said disc member having a center and a spherically curved outer surface in both sliding linear and rotatable engagement with said sleeve, respectively along a longitudinal axis of said sleeve passing through the disc member center and about three orthogonal axes passing through the disc member center.

4,268,124
OPTICAL REFLECTOR HAVING A NICKEL-IRON ALLOY REFLECTING SURFACE

Kenneth Lui, Fountain Valley, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Division of Ser. No. 917,779, Jun. 21, 1978, Pat. No. 4,231,847, which is a continuation-in-part of Ser. No. 775,310, Mar. 7, 1977, abandoned. This application Oct. 9, 1979, Ser. No. 83,184
Int. Cl.[3] G02B *7/18, 5/10*
U.S. Cl. 350—310 1 Claim

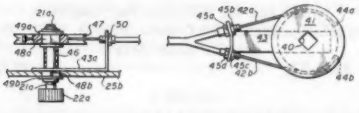


1. An optical mirror comprising a face sheet bonded to a lightweight substrate, said face sheet consisting essentially of a substantially homogeneous admixture of nickel and iron having a temperature expansion coefficient of less than about 5×10^{-6}, said homogeneous admixture containing substantially no iron oxide, and said lightweight substrate consisting essentially of graphite epoxy composite having substantially the same temperature coefficient of expansion as said face sheet.

4,268,125
METHODS OF FORMING AND METHODS OF CONTROLLING A PIVOTAL MIRROR ASSEMBLY

Walter L. Carter, 21429 84th West, Edmonds, Wash. 98020

Filed Feb. 1, 1979, Ser. No. 8,596
Int. Cl.[3] G02B *7/18*
U.S. Cl. 350—320 8 Claims



1. A method for viewing by the driver of the blind area opposite a first vehicle side opposite to the driver, as for detecting a second vehicle approaching from a position behind the normal to the first vehicle longitudinal axis through a side mirror pivotally mounted on the first vehicle side, comprising the steps of,

(a) Connecting a manually operable cable means from a first pulley wheel on the first vehicle near the driver to the pivotally mounted mirror on a second pulley wheel in a first position with the mirror aligned with the first line of focus normal to the vehicle longitudinal axis and substantially through the side mirror and the driver,

(b) Connecting one end of the manually operable cable means to the first pulley wheel on the other end of the cable means to the second pulley wheel on the movably mounted mirror for movement through a sector immediately behind the first line of focus to a second position with the mirror aligned with the second line of focus,

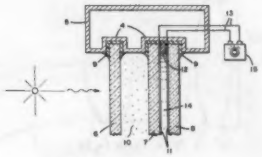
(c) Viewing through the pivotally mounted side mirror focused on the first line extending outwardly from the same vehicle side as the normal to the vehicle longitudinal axis through the side mirror, and

(d) Viewing through the side mirror as its line of focus is pivoted rearwardly through at least 70° for covering the blind area for detecting the second vehicle approaching from behind said normal to the first vehicle longitudinal axis.

4,268,126
THERMAL-PANE WINDOW WITH LIQUID CRYSTAL SHADE

Robin B. Mumford, Colts Neck, N.J., assignor to Allied Chemical Corporation, Morris Township, N.J.

Filed Dec. 20, 1978, Ser. No. 971,298
Int. Cl.[3] G02F *1/133*
U.S. Cl. 350—331 R 5 Claims



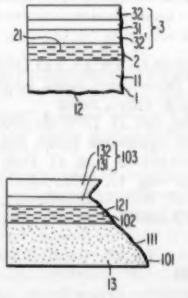
1. A thermal-pane window unit resistant to radiative heat transfer as well as conductive heat transfer, comprising:

three parallel, spaced window panes, mounted in a window frame, delimiting therebetween a first space providing a thermal break and a second space containing an electro-optical liquid crystal cell providing a selected light transmittance.

4,268,127
LIGHT TRANSMITTING AND REFLECTING POLARIZER

Nobuo Oshima, and Sajiro Maeda, both of Ibaraki, Japan, assignors to Nitto Electric Industrial Co., Ltd., Ibaraki, Japan

Filed Apr. 20, 1979, Ser. No. 31,798
Claims priority, application Japan, Sep. 29, 1978, 53-120664; Jan. 31, 1979, 54-10795
Int. Cl.[3] G02F *1/13*
U.S. Cl. 350—337 24 Claims

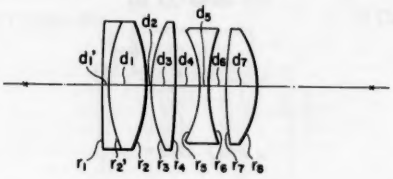


1. A light transmitting and reflecting polarizer comprising a transparent or semi-transparent resin film, an adhesive layer having uniformly dispersed therein transparent and/or semi-transparent particles, and a polarizing layer, said resin film and said polarizing layer being bonded through said adhesive layer.

4,268,128
OCULAR OF LARGE VISUAL FIELD

Toshifumi Uetake, and Masaki Matsubara, both of Hachiouji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 21, 1979, Ser. No. 40,871
Claims priority, application Japan, May 25, 1978, 53-62598
Int. Cl.³ G02B *3/00, 9/34*
U.S. Cl. 350—410 **4 Claims**



1. An ocular having wide visual field comprising a front lens group consisting only of a first lens component having positive refractive power and a rear lens group which is a triplet consisting of a second positive lens component, a third biconcave lens component and a fourth positive lens component, said ocular being so designed as to satisfy the following conditions:

$$1.65 < n_3 \quad (1)$$

$$0.7 < f_A/f_B < 1.3 \quad (2)$$

$$0.004f < d_2 < 0.25f \quad (3)$$

$$r_4 < -3f \quad (4)$$

$$0.08f < d_1 + d_1' < 0.36f \quad (5)$$

$$0.06f < d_6 < 0.2f \quad (6)$$

wherein the reference symbol f represents the equivalent focal length of the total lens system, the symbol f_A represents the equivalent focal length of the first lens component, the symbol f_B represents the equivalent focal length of the second through fourth lens components, the symbol d_2 represents the axial air space between the first and second lens components, the symbol $d_1+d'_1$ represents the axial thickness of the first lens component, the symbol r_4 represents the radius of curvature of the lens surface at the eye side of the second lens component, the reference symbol d_6 represents the axial air space between the third and fourth lens components and the symbol n_3 represents the refractive index of the third lens component, respectively.

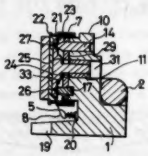
4,268,129
MIRROR FOR OPTICAL RECORDING SYSTEM

Yositugu Araki, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Jun. 21, 1979, Ser. No. 50,859
Claims priority, application Japan, Jun. 21, 1978, 53-75193; Aug. 17, 1978, 53-100340; Aug. 17, 1978, 53-100341; Aug. 17, 1978, 53-100342; Aug. 17, 1978, 53-100343; Aug. 17, 1978, 53-100344; Aug. 17, 1978, 53-100345; Aug. 17, 1978, 53-100346; Aug. 17, 1978, 53-100347; Aug. 17, 1978, 53-100348; Aug. 17, 1978, 53-100349
Int. Cl.³ G05D *25/00*
U.S. Cl. 350—486 **15 Claims**

1. A movable mirror device for an optical information recording and reproducing system comprising, a base portion having a bottom section and an upstanding section extending from said bottom section, said upstanding section having an opening therein adapted to receive a core member, a permanent magnet having opposite magnetic poles at opposite ends thereof and fixedly mounted on said bottom section of said base portion, a pair of yokes each having one end engaged with said opposite ends of said magnet, respectively, a plate member supported by said upstanding section of said base portion and being positioned between the other ends of said yokes,

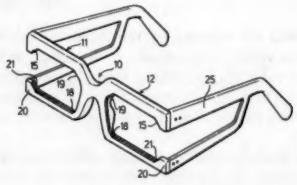
and a movable portion having a core, a mirror substrate supported by an end plate formed on one end of said core, a mirror fixed to said mirror substrate, a supporting portion provided on the other end of said core for pivotally supporting said core in said opening in said up-standing section and, a coil portion wound around said mirror substrate, said movable portion being disposed such that said coil portion of said movable portion is positioned in a magnetic field formed in gaps between said plate member and the other ends of said yokes.



4,268,130
EYE GLASS FRAMES

Michael Vinocur, 5 Fisherville Rd., #509, Willowdale, Ontario, Canada

Filed Jun. 12, 1978, Ser. No. 914,685
Claims priority, application Canada, Jun. 21, 1977, 281048
Int. Cl.³ G02C *5/14*
U.S. Cl. 351—121 **10 Claims**



1. A lens supporting structure for use with viewing lenses of a generally rectangular shape having a pair of parallel diametrically opposed corner edge surfaces, inclined with respect to adjacent lens edges, said structure comprising: a nose bridge, a pair of rim sections connected to said bridge on either side thereof, a pair of legs, and hinge means for connecting said legs to said rim section; each of said rim sections comprising: a first frame part extending from the upper end of said nose bridge substantially horizontal having a lens-receiving channel, and a corner part at its end remote from the nose bridge inclined downwardly with respect to the horizontal, said nose bridge having a lens receiving channel and a corner part at its lower end inclined parallel to and diametrically opposed to the corner part on said first frame part on said first frame part, each of said rims being open at least a portion of their remaining periphery, to permit said corner parts to compressively grasp and maintain the lens in said lens-receiving channel.

4,268,131

FIBER COLLAGEN CONTACT LENS

Teruo Miyata, Tokyo, Japan; Albert L. Rubin; Kurt H. Stenzel, both of Englewood, N.J., and Michael W. Dunn, New Rochelle, N.Y., assignors to Opticol Corporation, Stamford, Conn.

Filed Apr. 11, 1979, Ser. No. 29,091
The portion of the term of this patent subsequent to Sep. 23, 1997, has been disclaimed.
Int. Cl.[3] C08H *1/06;* C09H *1/04;* G02C *7/04*
U.S. Cl. 351—160 H 7 Claims

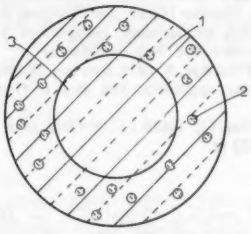
1. As an article of manufacture a soft contact lens consisting of a lens-shaped, subsequently crosslinked gel of defatted fiber collagen, said gel comprising 1.0 to 30.0 wt. % collagen and the balance water.

4,268,132

OXYGEN GENERATING CONTACT LENS

Charles W. Neefe, P.O. Box 429, Big Spring, Tex. 79720

Filed Sep. 24, 1979, Ser. No. 78,171
Int. Cl.[3] G02C *7/04*
U.S. Cl. 351—160 H 3 Claims



1. A contact lens of concave-convex form in section of a curvature substantially the same as the eye to which it is applied, having a plurality of oxygen emitting light receptors imbedded within the lens structure.

4,268,133

PREFERENTIAL ORIENTATION OF CONTACT LENSES

David J. Fischer, Sarasota; Idella B. Wooten, Bradenton; John C. Thomas, and James A. Reid, both of Sarasota, all of Fla., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Continuation of Ser. No. 924,719, Jul. 14, 1978, abandoned. This application Oct. 11, 1979, Ser. No. 84,055
Int. Cl.[3] G02C *7/04*
U.S. Cl. 351—161 20 Claims

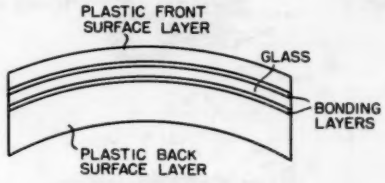
1. A soft contact lens having an optical power which varies radially and circumferentially about the optic axis of the lens comprising at least one character formed in relief upon a surface of the lens, said character being disposed in the peripheral portion of the lens adjacent the periphery without intersecting the periphery and symmetric about the 90th meridian thereof for causing said lens to maintain a predetermined orientation upon the eye of a wearer, said character being substantially smaller than the effective optical zone of the lens.

4,268,134

LIGHTWEIGHT LAMINATED PHOTOCHROMIC LENSES

Suresh T. Gulati, Elmira; Norman A. Smith, Corning, and Anton A. Spycher, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,107
Int. Cl.[3] G02C *7/10*
U.S. Cl. 351—163 8 Claims



1. A curved glass-plastic laminated lens comprising a plastic front surface layer, a photochromic glass core, and a plastic back surface layer, each plastic surface layer being bonded to the glass core by an adhesive bonding layer, wherein:

(a) the ratio of the thickness of the plastic front surface layer to the thickness of the plastic back surface layer is in the range of about 1:8 to 8:1 at all peripheral portions of the lens within about 2 lens thicknesses of the lens edge;

(b) the plastic front and back surface layers are composed of a polymerized allyl diglycol carbonate resin; and

(c) each adhesive bonding layer is composed of an adhesive having a tensile strength of at least about 4000 psi and a shear strength of at least about 2000 psi, and comprises a region at least about 0.002 inches in thickness wherein the elastic modulus of the adhesive does not exceed about 10,000 psi.

4,268,135

IMAGE FOCUSING APPARATUS

Eino M. Lehto, Juneau, Wis., assignor to Bell & Howell Company, Chicago, Ill.

Filed Sep. 27, 1979, Ser. No. 79,419
Int. Cl.[3] G03B *3/10*
U.S. Cl. 353—27 R 8 Claims

1. In an optical system having a lens, an image focusing apparatus for said optical system comprising:

lens holding means mounted to a frame for universal pivotal movement relative to said frame;

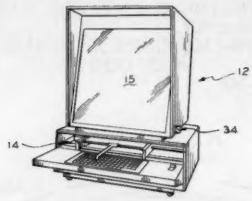
rotating lens adjusting means associated with said lens holding means for adjusting said lens, said rotating lens adjusting means including a barrel having a socket disposed therein and key slot means disposed along the length of said socket;

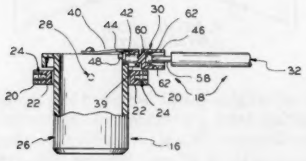
shaft means associated with said rotating lens adjusting means for turning and controlling said rotating lens adjusting means, said shaft means including a partially-spherical portion on one end thereof for slidably fitting into said socket of said rotating lens adjusting means and further including key means for slidably fitting into said key slot means, said key means extending from said partially-spherical portion in a radial direction with respect to said shaft means; and

means associated with said shaft means for movably securing a part of said shaft means to said frame;

whereby said shaft means is slidably and pivotally connected to said rotating means and whereby said rotating lens

adjusting means may be turned and controlled by said shaft means to adjust said lens regardless of the angular





disposition of said lens holding means and said rotating lens adjusting means with respect to said shaft means.

4,268,136

CAMERA HAVING AN AUTOMATIC EXPOSURE CONTROL MEANS

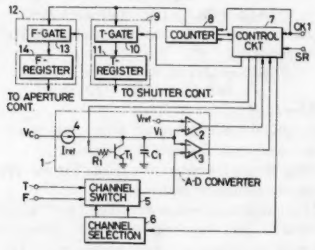
Haruji Ishihara, Kodaira; Ryushi Shimokawa, Fuchu; Michio Yagi, Hachioji; Kazuo Shiozawa, Hino; Kijiro Suzuki, Tokyo, and Kazuhisa Aratame, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd. and Hitachi, Ltd., both of Tokyo, Japan

Filed Jul. 12, 1978, Ser. No. 924,009

Claims priority, application Japan, Jul. 18, 1977, 52-85076

Int. Cl.[3] G03B *7/091*

U.S. Cl. 354—23 D **21 Claims**



1. An automatic exposure control circuit for a camera for automatically controlling the exposure value of a photographic film in accordance with plural types of exposure control information comprising:

a first signal supply means for supplying a first analog signal corresponding to a first type of exposure control information irrespective of the illumination of an object to be photographed, said first signal supply means being energized by a power source at the same time that a shutter release for said camera is operated;

a second signal supply means for supplying a second analog signal corresponding to a second type of exposure control information in accordance with said illumination of said object to be photographed, said second signal supply means being energized simultaneously with said first signal supply means by said power source;

an analog to digital converter for converting an analog signal into a digital signal;

a signal selection means coupled to said first and second signal supply means and said analog to digital converter for transmitting said first analog signal to said analog to digital converter during a first predetermined period immediately after said energizing of said first and second signal supply means, and transmitting said second analog signal to said analog to digital converter during a second predetermined period succeeding said first predetermined period; and

a control circuit means for controlling said exposure value with first and second digital output signals of said analog to digital converter respectively corresponding to said first and second analog signals which are produced through said analog to digital converter.

4,268,137

RADIATION-EMISSIVE FOCUSSING SYSTEM WITH INTEGRATION OF THE SIGNALS PRODUCED BY THE SYSTEM'S DETECTOR ARRANGEMENT

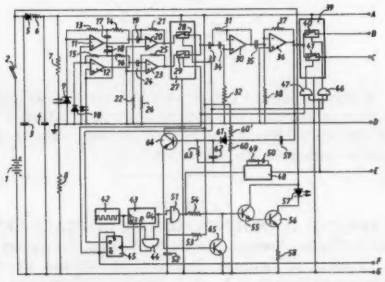
Istvan Cocron; Theodor Huber, and Wolfgang Ruf, all of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

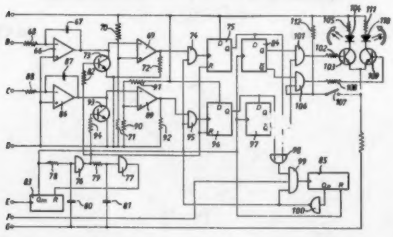
Filed Apr. 9, 1979, Ser. No. 28,186

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815150

Int. Cl.[3] G03B *13/18;* G01J *1/36*

U.S. Cl. 354—23 D **19 Claims**





1. A focusing system for use in cameras and the like, comprising a clocked radiation transmitter transmitting a single beam of radiation pulses towards a photographic subject; a radiation detector detecting such radiation pulses after their reflection from the subject and producing a pulsed received signal in response thereto; an integrator integrating the received signal and generating an integral signal which is an integral thereof; a first means connected to the integrator and operating in such a manner as to derive focus-control information from the integral signal, whereby camera focus can be

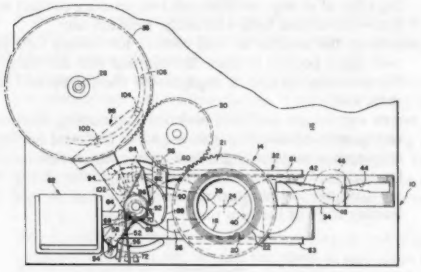
adjusted to correspond with distance between the camera and the subject; and a transmission means and a transmission means control connected thereto, the transmission means being interposed between the radiation detector and passing and blocking received signals generated by the radiation detector and from the integrator in accordance with commands issued by the transmission means control, whereby received signals are blocked from transmission to the integrator except during intervals which are substantially concurrent with detection of radiation pulses by the radiation detector, said first means being responsive to the intergral signal only after the integrator has integrated a plurality of pulses in the received signal and the integrator continuing to integrate the received signal until the integral signal reaches a predetermined value, at which time said plurality is counted, whereby focus-control information can be derived from the plurality of pulses which are so counted.

4,268,138

FOLLOW FOCUS FLASH ARRANGEMENT

Richard J. Coppa, Westwood; Seymour Ellin, Chestnut Hill, and John W. Stempeck, Reading, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed May 29, 1979, Ser. No. 42,912
Int. Cl.³ G03B *7/14, 7/16, 15/03*
U.S. Cl. 354—27 **11 Claims**



1. A photographic camera apparatus of the type suitable for use with a source of artificial illumination and having means for defining a film plane and an optical path for transmitting light from a scene along the optical path to expose photosensitive film located in the film plane, said apparatus comprising:

a blade mechanism;

means for mounting said blade mechanism for displacement from an initial closed arrangement wherein said blade mechanism precludes scene light from being transmitted along the optical path to the film plane to an open arrangement wherein said blade mechanism defines a maximum aperture so as to allow the passage of scene light along the optical path to the film plane and then to a final closed arrangement wherein said blade mechanism again precludes scene light from being transmitted along the optical path to the film plane, wherein said blade mechanism defines a range of varying exposure apertures as it is displaced from its said open arrangement to its said final closed arrangement;

means responsive to the actuation thereof for effecting the displacement of said blade mechanism from its said initial closed arrangement to its said open arrangement and then into its said final closed arrangement to define an exposure interval during which scene light is incident upon the film plane; and

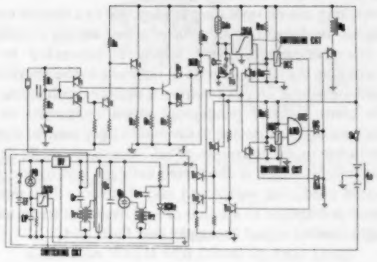
control means for effecting the firing of the source of artificial illumination at any one of a plurality of aperture sizes from said range of aperture sizes defined by said blade mechanism as it is displaced from its said maximum aperture open arrangement to its said final arrangement.

4,268,139

CAMERA FOR DAYLIGHT AND FLASH PHOTOGRAPHY

Takashi Uchiyama; Tokuichi Tsunekawa, both of Yokohama, and Takehiko Kiyohara, Zama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 638,084, Dec. 5, 1975, abandoned. This application Feb. 9, 1979, Ser. No. 10,904
Claims priority, application Japan, Dec. 10, 1974, 49/141740
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—34 **7 Claims**



1. Apparatus for synchronizing an electronic flash means with a camera including a film gate and a focal plane shutter having leading and trailing shutter curtains, comprising:

(a) a first switch electrically connected to the electronic flash device to trigger flash illumination thereof after a full-open condition of the film gate has been established;

(b) termination means for terminating the flash illumination by detecting the light amount of the flash illumination reflected by the object when the light amount reaches a predetermined value;

(c) light measuring means connected to the electronic flash means to start delay action in response to the termination of the flash illumination, said light measuring means producing a control signal after a time corresponding to brightness of the object; and

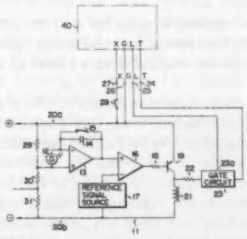
(d) control means functionally connected to the light measuring means to enable movement of the trailing shutter curtain in response to the control signal.

4,268,140

ELECTRICALLY-CONTROLLED SHUTTER FOR AUTOMATIC EXPOSURE CAMERA

Isao Kondo, and Yukio Nakajima, both of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1979, Ser. No. 53,284
Claims priority, application Japan, Jul. 6, 1978, 53-82240
Int. Cl.³ G03B *15/05*
U.S. Cl. 354—34 **3 Claims**



1. An electrically-controlled shutter circuit for use in an

automatic exposure camera being coupled with an electronic flash unit, comprising:

a shutter speed set circuit for setting a shutter speed in accordance with an amount of light incident onto a camera to produce a shutter control signal, said shutter speed set circuit including an integrating circuit having a light sensing element for receiving the light incident onto the camera when a shutter is open to produce an integrated output signal in accordance with the amount of the incident light, and a comparing circuit for comparing the integrated output signal produced from said integrating circuit with a reference signal;

a switching circuit operating in response to a shutter control signal produced by said shutter speed setting circuit;

an electromagnetic device which is connected to said switching circuit to operate in response to the operation of said switching circuit to drive a shutter mechanism;

light control signal producing means connected to said electromagnetic device to produce a light control signal in response to the operation of said electromagnetic device;

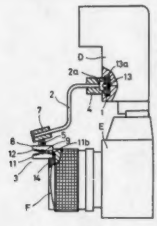
a gate circuit which is connected between said light control signal producing means and said electronic flash unit and open in response to a signal of said flash unit to permit the light control signal to supply said flash unit.

4,268,141

PHOTO-DETECTION ADAPTER FOR AN AUTOMATIC FLASH DEVICE

Ryutaro Mori, Hirakata, and Akira Iwamoto, Osaka, both of Japan, assignors to West Electric Company, Ltd., Osaka, Japan

Filed Nov. 9, 1979, Ser. No. 93,139
Claims priority, application Japan, Nov. 14, 1978, 53-140881
Int. Cl.[3] G03B *15/05*
U.S. Cl. 354—35 **12 Claims**



1. A photo-detection adapter for a strobe comprising

a light conduction means for conducting light therethrough,

a mounting means attachable to a barrel of a photographic lens,

an external photo-detection means in which an input end of said light conduction means is disposed and which is movably supported by said mounting means, said external photo-detection means being for receiving a reflection light from a photographic object at said input end, and

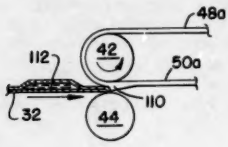
a coupling means for holding an output end of said light conduction means in front of a photo-detector of an automatic strobe thereby to give output light conducted through said light conduction means to said photo-detector.

4,268,142

CAMERA EMPLOYING WEB FOR FILM EJECTION AND PROCESSING

John M. Reynard, Framingham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 31, 1979, Ser. No. 109,124
Int. Cl.[3] G03B *17/50*
U.S. Cl. 354—86 **15 Claims**



10. A photographic film unit processing and ejection system for instant cameras having means defining a pressure nip through which an exposed fiom unit is passed from the camera interior for processing and discharge to the camera exterior, said system comprising:

a feed web having a flight portion extending through the pressure nip in the direction of film unit travel from the camera interior;

means located in the camera for advancing at least the leading edge of an exposed film unit into pressure contact with a portion of said feed web in the pressure nip;

means on the exterior of said camera for pulling said feed web flight portion to draw the exposed film unit through the pressure nip due to engagement thereof by said feed web; and

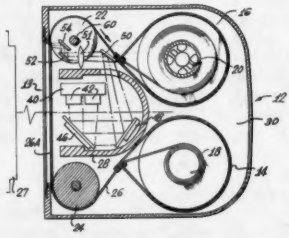
means carried on said feed web for augmenting frictional engagement of said feed web and a film unit, said frictional engagement augmenting means comprising means carried by said feed web to temporarily enlarge the size of the pressure nip to the approximate thickness of at least the leading edge of the film unit.

4,268,143

PHOTOGRAPHIC CAMERA WITH PROVISION FOR RECORDING SUPPLEMENTAL DATA

Le Roy M. Dearing, Studio City, and Edgar D. Wiegand, Sherman Oaks, both of Calif., assignors to L. M. Dearing Associates, Inc., Studio City, Calif.

Filed Oct. 31, 1979, Ser. No. 90,053
Int. Cl.[3] G03B *17/24*
U.S. Cl. 354—106 **16 Claims**



1. A photographic camera comprising:

a camera lens for recording a primary image;

a film supply spool;

a film take-up spool;

a pair of film guide rollers so disposed that when said camera is loaded with film the back of said film defines a space behind said camera lens, a frame of said film being held between said rollers to be exposed through said camera

lens, one of said rollers being divided into two axially separated roller sections with a gap therebetween; and

display means within said space for providing an illuminated data image to be recorded through the back of said film within said gap.

4,268,144

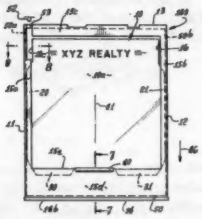
IMAGE BEARING TEMPLATE FOR INSTANT CAMERA FILM PACKS

Alton D. Wheeler, Pasadena, Tex., assignor to KW Research and Development, San Marino, Calif.

Filed Feb. 7, 1980, Ser. No. 119,416

Int. Cl.³ G03B *17/24*

U.S. Cl. 354—108 **15 Claims**



1. A device for use in conjunction with exposure of a photographic film carried by structure including a frame bounding a light passing zone, and comprising

(a) a template in the form of a substantially transparent, generally planar and rectangular sheet adapted to carry an image to be reproduced on the film,

(b) the template having multiple retainer tabs projecting at multiple edge portions of the sheet to removably fit beneath said frame to retain the template to said structure so that the main extent of the template overlies film carried by said structure,

(c) the template having a limit tab projecting at one edge portion of the sheet and outside the plane of said sheet to engage an edge of said frame for preventing removal of the template in response to endwise removal of exposed film from the carrier structure, whereby the sheet remains in the path of light transmission to unexposed film carried by said structure,

(d) said multiple tabs include two laterally elongated tabs at said one end of the template, said two laterally elongated tabs being in lateral alignment, and spaced apart, said limit tab located generally between said two laterally elongated tabs.

4,268,145

FILM CARTRIDGE ASSEMBLY

Frederick W. Harvey, Webster; Gurdip S. Sethi, and Stephen L. Sikorski, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,272

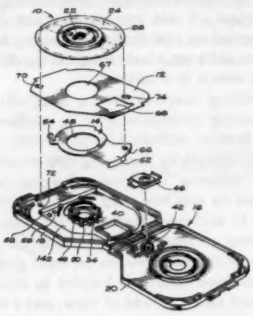
Int. Cl.³ G03B *1/00*

U.S. Cl. 354—121 **6 Claims**

1. In a photographic cartridge assembly of the type having an opaque casing with an exposure window in one wall for rotatably housing a disk of photographic film movable about a fixed axis such that different film portions are moved successively into alignment with the exposure window; the improvement comprising:

a cover member including an opaque region; and

means for mounting said cover member in the casing between the one wall and the film disk for oscillatory movement about an axis, different than the axis of rotation of the film disk, back and forth between a closing position in which said opaque region is in alignment with and closes the exposure window and an opening position in which



said opaque region is out of alignment with and opens the exposure window.

4,268,146

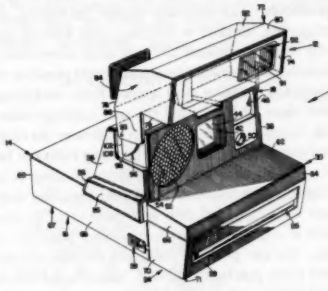
CAMERA WITH FOLDING FLASH UNIT

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jul. 3, 1979, Ser. No. 54,598

Int. Cl.³ G03B *15/05, 17/04;* E05D *11/10, 15/50*

U.S. Cl. 354—145 **4 Claims**



1. A camera having a foldable flash unit comprising:

a camera housing defined, at least in part, by a plurality of camera housing wall exterior surfaces including a forwardly facing lens mount wall surface, an apron wall surface extending forwardly from a bottom portion of said lens mount wall surface and cooperating with said lens mount wall surface to define a camera housing recess and a pair of laterally spaced side wall surfaces extending rearwardly from lateral edges of said lens mount wall surface, each of said side wall surfaces including a flash unit mounting section having a mounting surface;

an objective lens, mounted on said camera housing with its optical axis directed outwardly from said lens mount wall surface, for forming an image of a subject to be photographed in its field of view;

a flash unit housing defined, at least in part, by a plurality of flash unit housing wall exterior surfaces including an illumination source face surface, an adjacent rearwardly extending bottom wall surface and a pair of laterally spaced side walls joining lateral edges of said face and bottom wall surface and each including an integrally formed depending resiliently displaceable mounting leg, said mounting legs being laterally spaced so that a bottom section of each said leg overlaps a corresponding one of

said mounting sections when said mounting legs are in an unstressed state;

a source of illumination for illuminating a subject in the field of view of said lens to facilitate exposure and being mounted on said flash unit housing so that light emitted from said source is directed outwardly from said illumination source face surface;

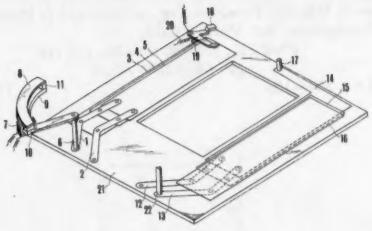
cooperating coupling means, integrally formed with said mounting sections and facing portions of said mounting leg bottom sections and operatively engageable in coupling relation by displacing said mounting legs outwardly and releasing them when aligned with said coupling means on said mounting section to return said mounting legs to said unstressed state, for coupling said flash unit housing to said camera housing for pivotal movement relative thereto between an erect position, wherein said illumination source is located to direct light therefrom toward said lens field of view, and a folded storage position wherein a major portion of said flash unit housing fits into said recess, said lens mount wall surface and said bottom wall surface are in face-to-face relation, said illumination source face surface and said apron wall surface are also in face-to face relation, and these surfaces and at least some of the other of said plurality of exterior surfaces of said camera housing and said flash unit housing cooperate to form an enclosure for protectively covering said lens and said illumination source; and

cooperating latching means, integrally formed with at least one of said mounting sections and a corresponding one of said mounting legs, for automatically releasably latching said flash unit housing in each of said erect and storage positions, said latching means including, on said one mounting section, a latching cam having separate erect and storage position latching cam faces thereon, an erect position stop spaced from said erect position cam face and a storage position stop spaced from said storage position cam face, and, located on said corresponding mounting leg bottom section, a cam follower having oppositely disposed erect and storage position follower latching faces thereon so that when said flash housing is in said erect position said follower is located between said erect position cam face and stop with said erect position follower face in engagement with said erect position cam face and said storage position follower face in engagement with said erect position stop and, when said flash housing is in said storage position, said follower is located between said storage position cam face and stop with said storage position follower face in engagement with said storage position cam face and said erect position follower face is in engagement with said storage position stop, said latching cam being formed to project outwardly from said mounting surface and including a raised exterior cam face that is substantially parallel to said mounting surface, said erect and storage position latching cam faces extending between edges of said exterior cam face and said mounting surface, said cam follower being configured to be positioned in side-by-side relation to said latching cam when in said erect and storage positions and to be displaced outwardly for movement over said raised cam face when moved between said erect and storage positions and said one resiliently displaceable mounting leg being unstressed and locating said follower in said side-by-side relation when said one leg is in said erect and storage positions and resiliently deflecting outwardly to allow said follower to follow the contours of said latching cam and pass over said raised exterior cam face when moved between said erect and storage positions while maintaining said coupling means thereon in operatively coupled relation with said cooperating coupling means on said one mounting section.

4,268,147
FOCAL PLANE SHUTTER DEVICE

Nobuaki Date, Kawasaki; Michio Senuma, Tokyo, and Syozo Yoshida, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 23, 1980, Ser. No. 162,324
Claims priority, application Japan, Jun. 22, 1979, 54-78950
Int. Cl.[3] G03B *15/03, 9/08, 9/40*
U.S. Cl. 354—147 **5 Claims**



1. A focal plane shutter device comprising:

(a) leading blades arranged to previously block an aperture for photographic light path when in an initial position and upon actuation of a shutter release to move in a first direction away from said aperture;

(b) trailing blades arranged to previously unblock said aperture when in said initial position and upon termination of a predetermined time interval from the start of movement of said leading blades in said first direction to start movement in said first direction and then to block said aperture;

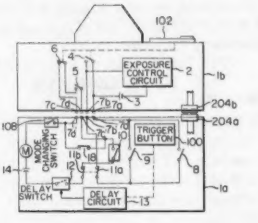
(c) braking means arranged at least near the terminal end of movement of said leading blades in said first direction upon engagement with said moving leading blades to brake said leading blades so that said blades get stopped in a predetermined position; and

(d) brake releasing means consisting of a member cooperative with said trailing blade and arranged to take said braking means out of the braking engagement with said leading blades when said trailing blades near the terminal end of movement thereof in said first direction.

4,268,148
MOTOR DRIVE MECHANISM

Hiroshi Wakabayashi, Yokohama, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,203
Claims priority, application Japan, May 17, 1978, 53-64957[U]
Int. Cl.[3] G03B *1/18;* **B03B** *7/26*
U.S. Cl. 354—173 **3 Claims**



1. In a motor drive mechanism for driving a camera having an automatic exposure control circuit comprising a trigger button depressable for rotating the motor to cause shutter releasing operation and wind-up operation, a first switch being

closed in response to the depression of the trigger button to actuate said automatic exposure control circuit, the improvement comprising means for detecting the rotation of the motor for the shutter release operation and rotation of the motor for the winding-up operation; and a second switch connected in parallel with said first switch and closed or opened by the output of said detecting means; the second switch being closed when the detecting means detects the rotation of the motor for the shutter release operation and opened when the detecting means detects the rotation of the motor for the winding-up operation.

4,268,149

LATCH FOR COLLAPSIBLE PHOTOGRAPHIC CAMERA

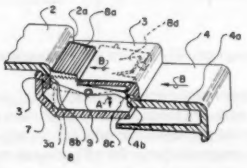
Helmut Ettischer, Ostfildern, Fed. Rep. of Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1980, Ser. No. 154,711

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1979, 7916012[U]

Int. Cl.³ G03B *17/04*

U.S. Cl. 354—187 **5 Claims**



1. In a photographic camera including a camera body portion for supporting photographic film in an exposure plane; a first tubular member fixed to the camera body; a movable lens carrier supporting a taking lens and supported by the fixed member and comprising two interconnected tubular members telescopically movable from respective forward extended positions wherein the lens may be positioned to form an image in the exposure plane, to respective rearward collapsed positions wherein the camera is more compact, one of the two interconnected members comprising an intermediate tubular member supported by the fixed tubular member, and the other a front tubular member supported by the intermediate member, the improvement comprising:

means for latching the interconnected members in their extended positions, including a two armed lever supported on the intermediate member and positionable in a latching position wherein one arm of the lever rests against a frontwardly facing surface of the fixed tubular member and the other arm of the lever rests against a rearwardly facing surface of the front tubular member to secure the lens carrier in its extended position; and spring means for urging the lever into its latching position.

4,268,150

DISPOSABLE CAMERA WITH SIMPLIFIED FILM ADVANCE AND INDICATOR

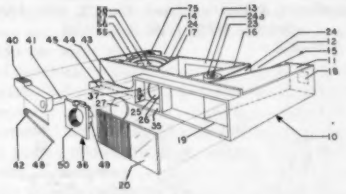
Laurence Chen, 1116 Via Zumaya, Palos Verdes Estates, Calif. 90274

Filed Jan. 28, 1980, Ser. No. 115,932

Int. Cl.³ G03B *17/42, 17/36*

U.S. Cl. 354—206 **8 Claims**

1. A disposable camera including a spring biased, rotatable film wind up roll; an end piece mounted on the wind up roll and bearing a circular groove thereon, and a plurality of equidistant stops spaced within the groove; a film supply roll for feeding the wind up roll; a downwardly biased member attached to the camera body and including a spring biased sheet with an engagement finger adapted to provide a sliding fit with the groove of the end piece to releasably engage the stops within the grooves and prevent rotation of the film wind up roll when thus engaged; a lens; a shutter; a spring biased shutter actuator, indluding a retaining finger having a shallow indent, the retaining finger being adapted to elevate the engagement finger out of contact with a groove stop upon release of the shutter until the downwardly biased member engages a succeeding stop in the groove, and continued elevation of the



shutter causes the retaining finger and downwardly biased member to separate, and the engagement finger to re-enter the groove and prevent further film windup when the engagement finger contacts a succeeding stop; an edge portion of the downwardly biased member being sized to contact the indent of the retaining finger and stabilize movement of the engagement finger within the groove.

4,268,151

VIEWFINDER DIOPTRY ADJUSTING DEVICE FOR SINGLE-LENS REFLEX CAMERAS

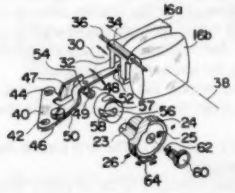
Toshio Kobori, and Takayoshi Miyamoto, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 20, 1979, Ser. No. 67,967

Claims priority, application Japan, Aug. 23, 1978, 53-116094[U]

Int. Cl.³ G03B *13/06*

U.S. Cl. 354—219 **5 Claims**



1. A view-finder system for a single lens reflex camera comprising:

an eyepiece lens system having a positive power as a whole and including a negative lens element movable in the view finder along the optical axis thereof and a positive lens element located stationary at the eye side of said negative lens element;

guide means for guiding said negative lens element for translational movement thereof along said optical axis;

a lever having an arm engageable with said negative lens element to determine the axial position of the lens as a function of angular position of the lever;

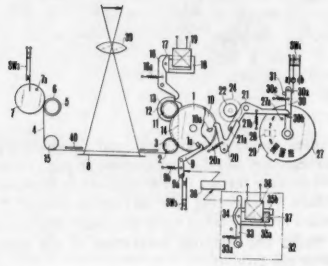
a manual member; and

control means for controlling the angular position of said lever in accordance with the operation of said manual member, said control means including a cam member engageable with said lever, a ratchet gear, a resilient member for resiliently restraining the rotational position of said ratchet gear, and a claw member engaging with said ratchet gear and responsive to the operation of said manual member for advancing said ratchet wheel, said ratchet gear being interlocked with said cam member.

4,268,152
BULB PHOTOGRAPHY CONTROL SYSTEM FOR CAMERA

Hiroshi Aizawa, Kawasaki; Masanori Uchidoi; Kazunobu Urushibara, both of Yokohama; Nobuyuki Suzuki, and Masami Shimizu, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1979, Ser. No. 107,552
Claims priority, application Japan, Dec. 28, 1978, 53/165846
Int. Cl.[3] G03B 7/08, 9/34, 9/08
U.S. Cl. 354—234 6 Claims



1. Bulb photography control system for a camera comprising:

a shutter opening member for actuating a shutter opening operation;

a shutter closing member for actuating a shutter closing operation;

a first holding member for holding the shutter opening member so as to check the shutter opening operation;

a first magnet operatively arranged with the first holding member for releasing the first holding member from holding the shutter opening member;

a second holding member for holding the shutter closing member so as to check the shutter closing operation;

a second magnet operatively arranged with the second holding member for releasing the second holding member from holding the shutter closing member;

a first circuit to which the first magnet is connected for supplying current to the control system from a power source;

a second circuit connected to the first circuit for controlling the second magnet;

first switch means arranged to be changed over into a first state wherein the first circuit and the second circuit are supplied with current and a second state wherein the first and the second circuits are not supplied with current, said first switch means being arranged to change from the first state into the second state after the shutter opening member is operated;

second switch means arranged to be changed over into a first state wherein the first circuit and the second circuit are supplied with current and a second state wherein the first and the second circuits are not supplied with current;

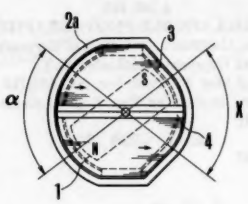
a movable control member operatively coupled to the second holding member and arranged to be movable between a position at which the operation of the shutter closing member is checked by the second holding member and a position at which the shutter closing member operation is not checked; and

a release member for moving the movable member between the position at which the operation of the shutter closing member is checked and the position at which the shutter closing member operation is not checked, said release member being arranged to simultaneously move the movable member into the position at which the operation of the shutter closing member is checked and change over the second switch means out of its first state into its second state in accordance with the actuation of the release member when bulb photographing operation is selected.

4,268,153
ELECTROMAGNETICALLY DRIVEN SHUTTER

Yoji Sugiura, and Masayoshi Kiuchi, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,434
Claims priority, application Japan, Jun. 22, 1979, 54-78949
Int. Cl.[3] G03B 9/08
U.S. Cl. 354—234 4 Claims



1. An electromagnetically driven slit exposure shutter comprising:

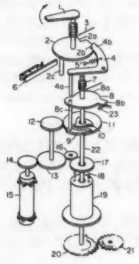
a rotary electromagnetic drive source; and

shutter blades with are mounted on the rotation shaft of said electromagnetic drive source and are arranged to travel by an electromagnetic force for effecting an exposure and for returning to the original position thereof, a rotor of said electromagnetic drive source being mounted on said rotation shaft to have the center of gravity thereof located on one side opposite to said shutter blades relative to said rotation shaft, said rotor being arranged to rotate to an extent not exceeding a half turn for causing the shutter blades to travel.

4,268,154
SELF-TIMER DEVICE FOR A CAMERA

Koichi Daitoku, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 1, 1980, Ser. No. 117,806
Claims priority, application Japan, Mar. 16, 1979, 54-32976[U]
Int. Cl.[3] G03B 9/64
U.S. Cl. 354—238 5 Claims



1. A self-timer device for a camera having a self-timer circuit including manually operated first switch means and adapted to start a time count upon operation of said first switch means and to release a shutter when a predetermined time has elapsed, and a set member movable by manual operation between a first position for rendering said circuit capable of counting time and a second position for rendering said circuit incapable of counting time, the improvement comprising:

reset means for moving said set member from said first position to said second position in response to film advance operation.

4,268,155

PHOTOGRAPHIC APPARATUS FOR PLATE THERMOGRAPHY

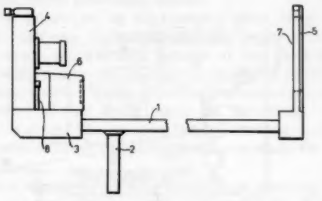
Günther Lehnert, Leverkusen, and Rainer Schiffer, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 13, 1979, Ser. No. 48,297

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1978, 7819870[U]

Int. Cl.³ G03B *17/00*

U.S. Cl. 354—293 **5 Claims**



1. Photographic apparatus for plate thermography, comprising an elongated support receptive of electrical energy and having a handle, a holder for a thermographic plate at one end and means for mounting a photographic camera with flashlight at the opposite end comprising an adaptor for the attachment of different camera systems and means for simultaneously releasably connecting electrically and mechanically the adaptor on the support in response to relative sliding movement of the support and adaptor along the longitudinal axis of the support comprising bus bars receptive of the electrical energy and arranged on the support and bus bars in the adaptor, where electrical connection is established between the flashlight and the electrical energy when the adaptor is mounted in position.

4,268,156

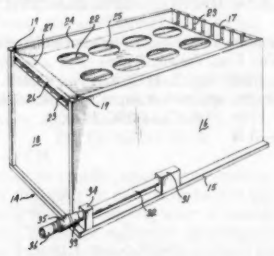
WASHING APPARATUS FOR PHOTOGRAPHIC MATERIALS

Edward Kostiner, 218 Oakridge Dr.,, Baie D'Urfe, Quebec, H9X 2N4, Canada

Filed Jul. 3, 1979, Ser. No. 54,623

Int. Cl.³ G03D *3/04*

U.S. Cl. 354—324 **6 Claims**



1. A washing apparatus for washing photographic materials comprising:

a tank for holding photographic materials, the tank having a generally rectangular shape with a rectangular bottom and rectangular sides, one side having a lower height than the other three sides to form a weir for water overflow, the top of the one side determining the water level in the tank,

a raised flow within the tank,

a plurality of parallel spaced apart partitions extending across the tank from the raised floor to the height of the one side,

a plurality of fluid entrance holes in the raised floor of the tank between the partitions,

a cover having a plurality of holes therein extending over the partitions and the one side adapted to allow the water level to rise in the holes above a bottom surface of the cover and keep the photographic materials in the tank below the water level,

a fluid distribution system connecting the plurality of fluid entrance holes to an aperture below the raised floor,

a removable aerator means removably connected to the aperture of the fluid distribution system where removal of said aerator allows said tank to drain, the aerator means having a connection to a water supply, a replaceable water jet within a tubular housing to allow different sized jets to be used, and an air control means for varying a flow of air into the aerator means downstream of the water jet, to mix with the water from the water jet.

4,268,157

TONER IMAGE TRANSFER METHOD AND APPARATUS FOR ELECTROSTATIC PHOTOGRAPHY

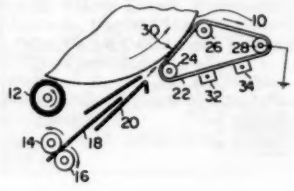
Yutaka Ebi; Koji Hirakura; Fuyuhiko Matsumoto; Wasaburo Ohta, and Satoru Tomita, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Division of Ser. No. 693,441, Jun. 7, 1976, abandoned. This application Aug. 28, 1978, Ser. No. 937,637

Claims priority, application Japan, Jun. 20, 1975, 50/75316

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 TR **4 Claims**



1. An electrostatographic apparatus for increasing the number of copies produced from a single electrostatic image through repeated development and transfer comprising:

a photoconductive member having a photoconductive dielectric layer for formation of an electrostatic image and development of the electrostatic image by means of a toner substance to form a toner image;

a transfer member having a dielectric layer to press a copy sheet between the dielectric layers of the photoconductive member and transfer member to transfer the toner image to the copy sheet; and

charging means to apply an electric potential to the dielectric layer of the transfer member of the same polarity as the electrostatic image on the photoconductive member, the electric potential having a magnitude less than the magnitude at which charge transfer between the dielectric layers occurs due to dielectric breakdown through the copy sheet and field emission from the copy sheet, preferably in the range of 480 to 3000 volts, the thickness and dielectric constant of the dielectric layer of the transfer member and of the photoconductive member and thickness and dielectric constant of the copy sheet being selected according to a predetermined relationship such that the magnitude of the electric potential is less than:

$$\sqrt{7737.6D_1} + 312 + 6.2D$$

where $D_1 = \frac{L_D}{K_D} + \frac{L_S}{K_S} + \frac{L_p}{K_p}$

$$D = \frac{L_D}{K_D} + \frac{L_S}{K_S}$$

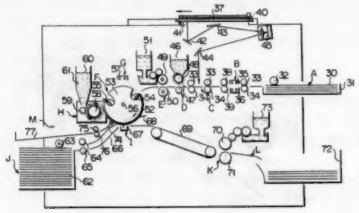
L_D is the thickness of the dielectric layer of the transfer member;
K_D is the dielectric constant of the dielectric layer of the transfer member;
L_S is the thickness of the dielectric layer of the photoconductive member;
K_S is the dielectric constant of the dielectric layer of the photoconductive member;
L_P is the thickness of the copy sheet; and
K_P is the dielectric constant of the copy sheet.

4,268,158

DRY PLANOGRAPHIC PRINTING APPARATUS

Tsutomu Naganuma, Funabashi; Hisao Hoshi, Tokorozawa; Hiroji Kumagai, Narashino, and Kaneki Yoshida, Kodaira, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Division of Ser. No. 862,607, Dec. 20, 1977, Pat. No. 4,175,958. This application Dec. 21, 1978, Ser. No. 971,913
Claims priority, application Japan, Dec. 23, 1976, 51/155474[U]; Sep. 8, 1977, 52/108196[U]
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 R **7 Claims**



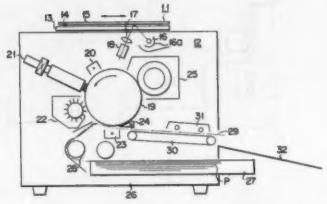
1. A dry planographic printing apparatus comprising a photosensitive plate feed mechanism for feeding photosensitive plate including an electrically conductive support and a photoconductive layer formed on said support, said photoconductive layer comprising a resin binder and a photoconductive powder dispersed in said binder; a charging mechanism for electrically charging said photosensitive plate; an exposure mechanism for selectively exposing said photosensitive plate to normal or reverse image; a development mechanism for developing by means of a conductive toner said photosensitive plate with a latent electrostatic image formed thereon by said exposure mechanism; a fixation mechanism for fixing the conductive toner, a divergence mechanism for separately distributing the normal or reverse-image-fixed photosensitive plates to a normal-image-fixed photosensitive plate delivery mechanism and to a reverse-image-fixed photosensitive plate attaching mechanism for attaching the reverse-image-fixed photosensitive plate to a plate cylinder, said reverse-image-fixed photosensitive plate acting as a dry planographic printing plate, a further charging mechanism for electrically charging the attached dry planographic printing plate; a toner-development mechanism for reversal-developing a latent electrostatic image obtained by said charging by means of a toner with a charge of the same polarity as that of the charge on said latent electrostatic image; a transfer material feed mechanism for feeding sheets of transfer material; a transfer mechanism for transferring the toner to the fed transfer material; a toner-fixation mechanism for fixing the toner; a delivery mechanism for delivering the transfer material having the fixed toner; and a plate takeout mechanism for taking out said dry planographic printing plate after printing of a fixed quantity.

4,268,159

ELECTROGRAPHIC COPYING APPARATUS

Tsuneo Tashiro, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 10, 1979, Ser. No. 56,306
Claims priority, application Japan, Jul. 18, 1978, 53-87260
Int. Cl.[3] G03G *15/00*; G01D *15/14*
U.S. Cl. 355—3 R **6 Claims**



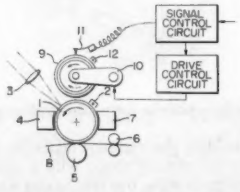
1. An electrographic copying apparatus comprising:
a scanner for scanning individual documents and providing document information;
means for generating retrieval code data corresponding to the documents;
memory means for (a) storing the retrieval code data from said retrieval code data generating means and (b) storing document information from said scanner in correspondence with said retrieval code data;
means for selecting a desired one of said retrieval code data and for reading out from said memory means the document information corresponding to the selected retrieval code data; and
an electrographic printer including means for converting said selected retrieval code data and said document information read-out from said memory means into a corresponding optical image.

4,268,160

ELECTROPHOTOGRAPHIC COPYING APPARATUS CAPABLE OF REPRODUCING ELECTRIC SIGNAL IMAGE

Toshio Muramatsu, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 2, 1979, Ser. No. 62,961
Claims priority, application Japan, Aug. 4, 1978, 53-94645
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 R **6 Claims**



1. In an electrophotographic copying apparatus for normally producing a copy of an original and including a photosensitive medium rotatable at a predetermined speed, means for project-

ing onto the photosensitive medium an image of an original to be copied to produce an electrostatic latent image thereof on the medium, means for developing the latent image on the medium, and means for moving a copy sheet into transferable relation with the medium so as to transfer the developed image of the original onto the copy sheet; secondary means for receiving an image represented by an electric signal concurrently and without interfering with normal electrophotographic copying operations of the apparatus and at a rate independent of the operative speed of the normal copying operation, said secondary means comprising:

an electric charge carrying medium movable between a first position spaced from the surface of the photosensitive medium and a second position in transferable relationship with the surface of the medium;

an electric signal generating means;

means for producing an electrostatic latent image on the charge carrying medium in said first position thereof in accordance with electric signals of the electric signal generating means and at a rate independent of the predetermined rotative speed of the photosensitive medium, the formation of said latent image on the charge carrying medium at said first position thereof enabling concurrent, independent use of the photosensitive medium for electrostatic; and

means for selectively moving said charge carrying medium from said first to said second position and for driving said charge carrying medium in the same direction as and at the predetermined rotative speed of the photosensitive medium during times when the photosensitive medium is not involved in normal electrophotographic copying operations so as to transfer an electrostatic latent image on said charge carrying medium onto the photosensitive medium for subsequent development and transfer to a copy sheet;

whereby the movability of said electric charge carrying medium from said second position in transferable relation with the photosensitive medium to said first position spaced therefrom permits the receipt and storage on the charge carrying medium of an electrostatic latent image from a secondary source while the photosensitive medium is concurrently utilized in normal electrophotographic copying operations such that transfer of the stored image to the photosensitive medium for subsequent development and transfer to a copy sheet can be effected at a selectable time when the photosensitive medium is not involved in electrophotographic copying.

4,268,161

ELECTROPHOTOGRAPHIC APPARATUS WITH CORONA DISCHARGE CONTROL

Kimio Nakahata, Kawasaki; Yoshinori Aguro, Fuchu, and Yasuyuki Tamura, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

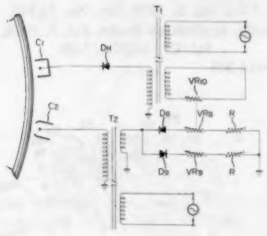
Continuation of Ser. No. 872,779, Jan. 27, 1978, abandoned. This application Oct. 4, 1979, Ser. No. 81,850

Claims priority, application Japan, Feb. 9, 1977, 52-13388

Int. Cl.[3] G03G *15/02*

U.S. Cl. 355—3 CH **10 Claims**

1. An electrophotographic apparatus comprising a photosensitive member including an electroconductive layer, a photoconductive layer and an insulating layer; a variably controlled primary corona discharge means for applying a charge of a predetermined potential onto the surface of said photosensitive member; a secondary corona discharge means for applying a corona discharge containing a component of opposite polarity to that of said primary corona discharge; an imagewise exposure means for exposing said photosensitive member to a light image substantially simultaneously with the corona discharge by said secondary corona discharge means; high-voltage supply means including high voltage transformers for supplying predetermined high-voltages to said primary and secondary corona discharge means, at least one of said transformers having the drooping characteristic, and being provided with a primary input coil, a secondary high-voltage output coil and a tertiary coil associated with a variable load impedance; and a corona discharge link control means for a linked control of the



amounts of corona discharge from said primary and secondary corona discharge means to provide an electrostatic latent image having a predetermined potential at the light areas of the image.

4,268,162

ELECTROGRAPHIC COPYING APPARATUS

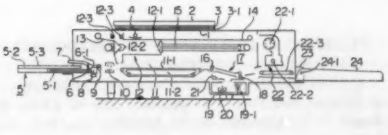
Kiyohito Ebisawa, Tokyo; Satoshi Hisabayashi, Hachioji; Kazuyuki Hashimoto, Hachioji; Mitsuo Kuromori, Hachioji, and Toshio Koike, Hachioji, all of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Apr. 23, 1979, Ser. No. 32,250

Claims priority, application Japan, Apr. 25, 1978, 53/48327; Apr. 25, 1978, 53/54169[U]

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—14 R **4 Claims**



1. An electrographic copying apparatus comprising:

(a) a paper feeding device which inserts a photosensitive paper, stored within a paper box, into the copying apparatus;

(b) a charging device which charges the paper surface;

(c) an exposure device which exposes the paper corresponding to an original;

(d) a paper detector arranged at an inlet for the photosensitive paper;

(e) a liquid developing device which comprises a developer vessel and a liquid developer feed pump;

(f) a paper conveyor which transports the exposed paper to the developing device; and

(g) a control device comprising a plurality of switching means which are arranged to be actuated in sequence in response to a signal from the paper detector,

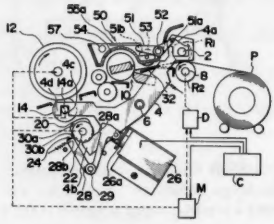
in which said developer feed pump is connected to said control device so as to be actuated by one of said switching means.

4,268,163

PAPER FEEDING DEVICE FOR A COPYING MACHINE

Yasuhiko Doi; Soichi Iwao, and Takaharu Takagishi, all of Toyokawa, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 5, 1979, Ser. No. 54,915
Claims priority, application Japan, Jul. 7, 1978, 53-94300[U]
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—14 SH 10 Claims



1. In an electrostatic copying apparatus having at least a device for nipping a leading end of a strip of paper as paid off from a roll and for feeding the paper during a copying operation of the apparatus, and a driving motor for operating the apparatus, said device comprising:

a pair of feed rollers for nipping the leading end of the strip of paper and being movable out of contact with one another;

means for holding down the leading end of the strip of paper at least while said pair of feed rollers are moved out of contact with one another, whereby the leading end is maintained in readiness for the copying operations during the inoperation of said driving motor;

means for moving said pair of feed rollers out of contact with one another;

means for actuating said moving means; and

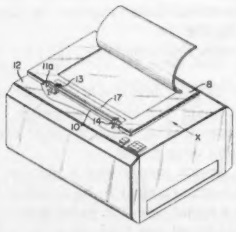
means for controlling at least the operation of said feed rollers, said driving motor and said actuating means so as to maintain said rollers in contact with one another during the copying operation of the apparatus, said actuating means being arranged for effecting movement of said rollers out of contact with one another during inoperation of said driving motor.

4,268,164

COMPOSITE INFORMATION RECORDING APPARATUS AND ORIGINAL POSITION DESIGNATING MECHANISM THEREFOR

Tatsuo Yajima, and Hiroya Nakamura, both of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jun. 25, 1979, Ser. No. 51,965
Claims priority, application Japan, Jun. 26, 1978, 53/77259
Int. Cl.[3] G03B *27/52*
U.S. Cl. 355—41 9 Claims



1. A composite information recording apparatus in which an optical system projects the image of an original positioned on a slidable copy board onto a moving photosensitive surface, the improvement comprising:

a slidable means mounted adjacent said copy board for selectively delineating the beginning and end of that portion of the original to be copied;

means projecting a secondary source of information onto said photosensitive surface;

means normally interrupting the projection of the image of the original along the path of said optical system; and

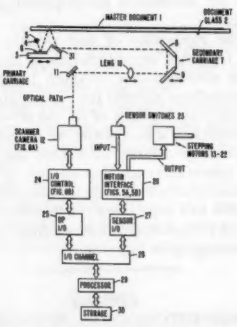
means operated by said slidable means for actuating said interrupting means to enable projection of the image of the original along the path of the optical system and substantially simultaneously deenergize said secondary source of information at the beginning of that portion of the original to be copied, and actuating said interrupting means to interrupt the projection of the image of the original along the path of the optical system and substantially simultaneously energize said secondary source of information at the end of that portion of the original to be copied.

4,268,165

APPARATUS AND METHOD FOR CONTROLLING THE ADJUSTMENT OF OPTICAL ELEMENTS IN AN ELECTROPHOTOGRAPHIC APPARATUS

Paul J. Bradmon, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,206
Int. Cl.[3] G03B *27/52*
U.S. Cl. 355—55 16 Claims



1. An apparatus for optimumly adjusting the optical elements of a copier to positions forming images of lines, on an illuminated background, which have the greatest background-to-line illumination contrast; including an electronic scanner for examining, at different optical adjustments, point-by-point, target line and background images and generating at an output signals identifying the amount of light reflected at each point; wherein the invention is characterized by means for indicating the adjustment at which there is greatest contrast, comprising:

stack means, connected to the electronic scanner output for retaining, in each of a plurality of positions, one of the light level representations;

first means interconnecting the scanner and stack means for sequentially entering into the same one of said positions the light level representations at each current target point as the scanner repeatedly progresses across a target line and causing the contents of each position to be placed into an adjacent position;

a storage register for retaining background light level representations;

comparison means, connected to the stack storage register and scanner, for comparing background light level representation in the storage register with the average of the

representations in all of the stack positions and supplying at an output a first comparison signal if average is less than the background and a second comparison signal if it is more;

second means, interconnecting the scanner, the stack and storage register, operable by a first comparison signal from the comparison means output, to enter into the storage register aforesaid average of the representations in all of the positions;

recognition means, connected to the comparison means output and to the scanner, operable upon the occurrence of a second signal following a first signal, to supply an indication that the lowest light level representation has occurred; and

utilization means, connected to the recognition means and to the scanner, for supplying at an output signals identifying the optical adjustment giving the lowest amount of reflected light.

4,268,166

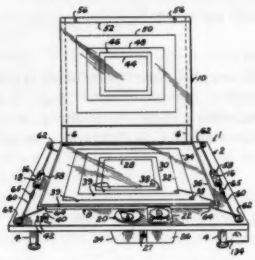
APPARATUS AND METHOD FOR MODIFYING IMAGES ON PHOTOGRAPHIC FILM

Thomas L. Byers, 3000 SW. 60, Oklahoma City, Okla. 73159

Filed Jan. 22, 1979, Ser. No. 5,617

Int. Cl.³ G03B *27/10*

U.S. Cl. 355—84 **7 Claims**



1. In a graphics modifier having a planar base, a stationary film supporting face plate overlying the base and a transparent superposed film supporting carriage panel movably supported relative to the face plate and having pulley and cable means maintaining marginal edges of the carriage panel parallel with the respective marginal edges of the face plate during movement of the carriage panel, the improvement comprising: orbital and linear motion guide means mounted on said base and selectively connected with said carriage panel for moving said carriage panel in a predetermined path; and, motor means drivably connected with said motion guide means.

4,268,167

DISTANCE MEASURING SYSTEM

Robert J. Alderman, 812 59th St. N.W., Bradenton, Fla. 33505

Filed Jan. 8, 1979, Ser. No. 1,582

Int. Cl.³ G01C *3/00, 5/00*

U.S. Cl. 356—1 **8 Claims**

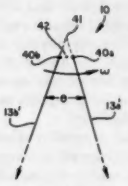
1. System for determining the distance between a first location and a second location, comprising:

means at said first location for providing a pair of separate beams of radiation which have a predetermined angular relation to each other and which traverse said second location at a predetermined angular velocity;

said beams of radiation rotating about an axis of rotation at said first location; and

said beams diverging at a fixed angle in relation to a point of divergence which is not coincident with said axis of rotation;

means at said second location for detecting the presence of said beams of radiation; and



means at said second location responsive to said detecting means to provide a signal corresponding to the elapsed time between detection of said separate beams as said pair of beams traverses the second location.

4,268,168

EGG CANDLING DEVICE

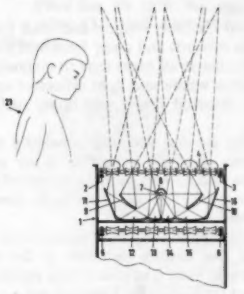
Daniel C. C. Dewaele, Winterswijk, Netherlands, assignor to Staalkat B.V., Aalten, Netherlands

Filed Nov. 21, 1978, Ser. No. 962,801

Claims priority, application Netherlands, Jan. 5, 1978, 7800150

Int. Cl.³ G01N *33/08*

U.S. Cl. 356—58 **2 Claims**



1. An egg candling device comprising a conveyor for conveying eggs in a plurality of lanes, a partly open housing mounting guiding means for guiding the conveyor, and illuminating means for the candling of eggs to be transported by means of said conveyor, the illuminating means including at least one reflector mounted in said housing for each lane of the conveyor, and at least one lamp disposed between the conveyor and the reflectors, the reflectors being so constructed and arranged as to converge the light from the lamp to respective points which are located in the respective lane for the eggs to be candled.

4,268,169

FLAW DETECTION PROBE FOR CYLINDRICAL BORES

Charles Stenning, 671 Enchanted Way, Pacific Palisades, Calif. 90272

Filed Apr. 16, 1979, Ser. No. 30,093

Int. Cl.³ G01B *11/22*

U.S. Cl. 356—241 **6 Claims**

1. An assembly for visually inspecting light reflecting cylindrical surfaces that define transverse bores in devices of like demensions, which devices have sidewalls and flat bottom surfaces, said assembly including:

a. a horizontal platform having an upper surface on which

said bottom surface of one of said devices rests, said platform having a transverse opening therein;

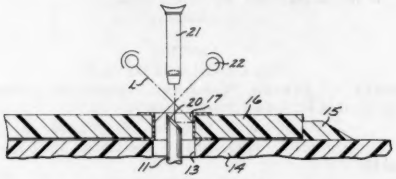
b. stop means on said platform that when engaged by said sidewalls of one of said devices dispose said bore thereof in vertical alignment with said transverse opening;

c. a tubular microscope disposed a substantial distance above said platform and axially aligned with said opening;

d. light emitting means for illuminating one of said cylindrical surfaces when one of said devices is disposed on said platform with said bore therein axially aligned with said opening in said platform;

e. an elongate probe of smaller diameter than that of said bore that is axially aligned in a vertical position with said bore and opening, said probe including a lower end and an upper end, said upper end being light reflective and angularly disposed;

f. a vertical shaft that has an upper end and a lower end, both



of which are disposed below said platform, with said lower end of said probe removably secured to said upper end of said shaft;

g. first means that rotatably support said shaft for longitudinal movement towards and away from said platform;

h. second means that at all times tend to maintain said shaft in a first position where said light reflective upper end of said probe is disposed below said upper surface of said platform;

i. third means for moving said shaft upwardly to a second position where said light reflective upper end of said probe is within said bore to permit a section of the surface of said device that defines said bore to be viewed in said microscope; and

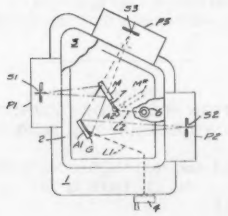
j. fourth means for rotating said shaft and probe to permit the entire surface that defines said bore to be sequentially viewed when said shaft is in said second position and said shaft is rotated through three hundred and sixty degrees.

4,268,170

MULTI-PATH MONOCHROMATOR

Bruce K. Flint, Lancaster, Mass., assignor to Acton Research Corporation, Acton, Mass.

Filed Sep. 18, 1979, Ser. No. 76,612
Int. Cl.³ G01J *3/18*
U.S. Cl. 356—334 **3 Claims**



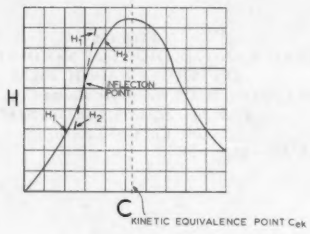
1. A monochromator comprising a housing having at least three ports including at least one entrance and one exit port; and a diffraction grating and a single reflector defining a first folded path between two of said ports on opposite sides of the housing, the reflector intercepting a second path from the third of said ports to the grating at an angle to the first path, and the reflector being moveable out of the second path to complete the second path directly to the grating and thence to one of the first two ports.

4,268,171

METHOD DETERMINING CONCENTRATION IN RATE NEPHELOMETRIC IMMUNOCHEMICAL ANALYSIS

James C. Sternberg, Fullerton, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 816,414, Jul. 18, 1977, abandoned. This application May 14, 1979, Ser. No. 38,978
Int. Cl.³ G01N *21/00*
U.S. Cl. 356—341 **1 Claim**



1. For use with a nephelometric measuring system, a method of rate nephelometric immunochemical analysis in which an antigen is reacted with a reagent containing an antibody and the antigen concentration C is determined according to the formula

$$H = \frac{MEC^2(1 - AC)}{1 + (E - A)C}$$

where A is an empirical constant inversely related to the titer of the antigen, E is an empirical constant related to avidity, M is an empirical constant determining the overall scaling and sensitivity of the measuring system, and H is the peak rate of change of a nephelometric signal produced by the antigen-antibody reagent reaction, said method comprising the steps of:

(1) calibrating the measuring system by the sub-steps of:

(a) initiating a reaction between a known concentration of a single antigen sample (calibrator) and the antibody reagent to be used in unknown concentration sample analysis;

(b) monitoring the rate of change with respect to time of the nephelometric signal produced by the calibrator antigen-antibody reaction to determine the peak rate H; and

(c) solving the foregoing equation for M using the E and A constants of the reagent, the known C of the single calibrator antigen and the observed peak rate H; and

(2) analyzing an unknown sample by the further sub-steps of:

(d) initiating a reaction between an unknown concentration of antigen sample and the antibody reagent;

(e) monitoring the rate of change with respect to time of the nephelometric signal produced by the unknown antigen-antibody reaction to determine the peak rate H; and

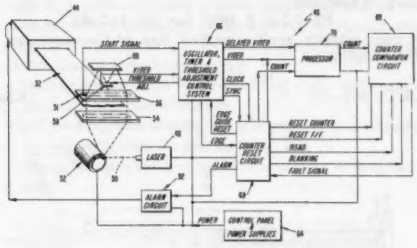
(f) solving the foregoing equation for the unknown antigen concentration C from the value of H determined in step (e), the known values of E and A, and the value of M determined in step (c) from the single calibrator antigen-antibody reaction of step (a).

4,268,172

METHOD OF AND SYSTEM FOR AUTOMATICALLY ADJUSTING A THRESHOLD LEVEL OF A PULSE GENERATING CIRCUIT TO INSPECT A WEB

Frank H. Blitchington, Richmond, Va., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Apr. 15, 1980, Ser. No. 140,560
Int. Cl.³ G01N *21/86, 21/89*
U.S. Cl. 356—431 **14 Claims**



1. A method of automatically adjusting a threshold level of a pulse generating circuit in response to light emanating from a light-emittable area in a web, which comprises the steps of:

passing successive scans of light from a light source over the light-emittable area of the web with repetitive scan cycles;

sensing the amount of light emanating from the light-emittable area;

developing a light pulse having a level proportional to the amount of light sensed;

establishing a threshold level;

comparing the level of the light pulse with the threshold level;

producing a threshold pulse when the light pulse level exceeds the threshold level; and

reducing the threshold level in response to the threshold pulse so that subsequent light pulses produce threshold pulses when the reduced threshold level is exceeded.

4,268,173

REFLECTOMETERS

William R. Barnard, Horsham, and Phillip W. Francis, Crawley Down, both of England, assignors to Direct Power Limited, London, England

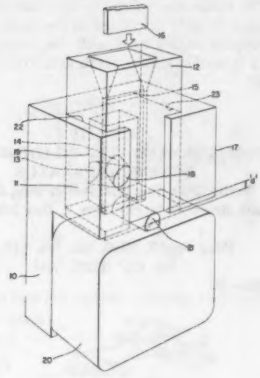
Filed Dec. 18, 1978, Ser. No. 970,117
Claims priority, application United Kingdom, Dec. 22, 1977, 53606/77; Mar. 15, 1978, 10283/78
Int. Cl.³ G01N *21/55*
U.S. Cl. 356—445 **13 Claims**

1. An optical reflectometer, comprising:

means, including at least a front wall, for defining a chamber;

means defining an incident light path extending from said front wall of said chamber-defining-means to said chamber;

carrier means, removably disposed within said chamber and having means for accommodating said incident light path defined within said chamber-defining-means, for removably guiding a test object relative to said carrier means and for carrying said test object, along a fixed path intercepting said incident light path, to a fixed position located within said incident light path; and



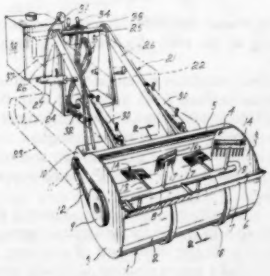
photoresponsive means for receiving light reflected from said test object.

4,268,174

CONCRETE MIXER

Fidel Falardeau, 4851 Laurier Boulevard, La Plaine, Canada (J0N 1B0)

Filed Jun. 25, 1979, Ser. No. 51,484
Int. Cl.³ B28C *7/04;* B01F *7/04*
U.S. Cl. 366—18 **6 Claims**



1. A concrete mixer and the like adapted to be attached to the lifting system of a tractor or the like vehicle, comprising a bucket made of a cylindrical drum having an end wall at each end of a cylindrical wall, the latter having an aperture extending from one end wall to the other end wall with longitudinal edges extending straight and substantially parallel to the longitudinal axis of the drum, the angle defined by said aperture with the longitudinal axis of the drum as center being a maximum of a quarter of a circle, a shaft mounted in the drum along the longitudinal axis of the latter and carried for rotation by the two end walls, drive means mounted on the drum and connected to the shaft to rotate the same, radial arms fixed to the shaft and spaced from each other, and mixing blades fixed to the outer end of the arms, the drum having a first pair of bearings fixed to the cylindrical wall and spaced along a pivot axis of the drum parallel to the shaft, the first pair of bearings connecting the drum to the lifting system to support the drum in a substantially horizontal position, the drum having a second pair of bearings fixed to the cylindrical wall and spaced along an axis parallel to the pivot axis of the drum to connect to drive means forming part of the lifting system and used to pivot the

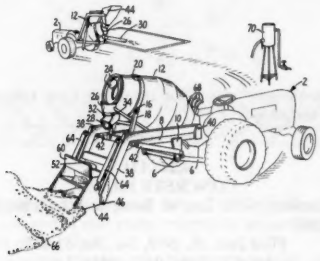
drum around the pivot axis thereof between a loading position with the aperture upwardly facing and an unloading position with the aperture facing downward, each mixing blade comprising a bar transversely fixed to the outer end of each of the radial arms, a flexible strip fixed to the outer edge of said bar and in sweeping engagement with the internal surface of the drum and a row of spaced-apart fingers fixed to the inner edge of said bar.

4,268,175

TRACTOR MOUNTED SELF-LOADING CONCRETE MIXING APPARATUS

Robert N. Norlie, P.O. Box 824 Shelter Bay, La Conner, Wash. 98257, and Bruce D. Norlie, Rte. 1, Box 348, Durham, Calif. 95938

Filed Feb. 7, 1980, Ser. No. 119,527
Int. Cl.³ B28C *7/08*
U.S. Cl. 366—19 **7 Claims**



1. Tractor-mounted, self-loading mixing apparatus, comprising

a mounting frame attachable to a standard three-point hitch mounting at the rear of a tractor for support from the tractor;

a mixing drum rotatably mounted to said frame with the axis of rotation inclined from horizontal with the end of said drum which projects upwardly being open for receiving and discharging material therethrough;

means for rotatably driving said drum; and

scoop means pivotally connected to said support frame and including

at least one support arm having one end pivotally connected to said frame for movement between a lowered position with the other end of said arm proximal the ground and a raised position with said other end proximal said drum open end;

means for selectively moving said support arm between said lowered position and said raised position;

bucket means including a bucket pivotally mounted to said arm adjacent said other end thereof, said bucket having an open first end for scooping material thereinto and a second end generally opposed to said first end and including selectively openable gate means for selectively opening and closing off said second end, and said bucket being selectively pivotable between a first position with said first end facing generally downwardly and a second position with said second end facing generally downwardly, and

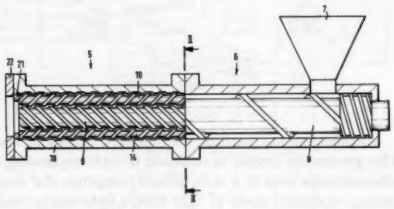
means for selectively pivoting said bucket between said first position and said second position and for holding said bucket at pivotal positions intermediate said first position and said second position, whereby the bucket may be positioned intermediate the first and second positions with the open first end facing generally horizontally for scooping material such as gravel into the bucket when the support arm is in its lowered position, and then the arm may be raised and the bucket may be pivoted to either the first position for dumping the material out the first end of the bucket, or the second position for dumping the material out the second end of the bucket.

4,268,176

PLANETARY EXTRUDER FOR THERMOPLASTICS MATERIAL

Werner Muller, Hanover, Fed. Rep. of Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hanover, Fed. Rep. of Germany

Filed Jan. 9, 1980, Ser. No. 110,684
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1979, 2900988
Int. Cl.³ B29B *1/10*
U.S. Cl. 366—83 **2 Claims**



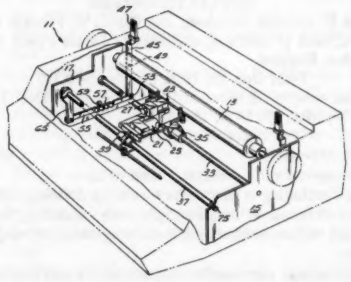
1. In a planetary roller extruder for thermoplastic material, which said extruder has a main screw threaded spindle, a plurality of screw threaded planetary spindles meshed with said main spindle and a feed screw, at an intake end of said extruder, with said main spindle secured against relative rotation with respect to said feed screw, the improvement comprising providing said planetary spindles in groups with each of said groups comprising at least three of said planetary spindles and with said planetary spindles of each of said groups successively shorter, considered in a direction around said main spindle opposite to the direction in which said planetary spindles orbit around said main spindle in operation, to form receiving chambers for said material fed by said feed screw and to be extruded.

4,268,177

PAPER THICKNESS ADJUSTING MECHANISM FOR IMPACT PRINTER

John R. Veale, Manhattan Beach, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.

Filed Nov. 1, 1978, Ser. No. 956,738
Int. Cl.³ B41J *11/20*
U.S. Cl. 400—55 **4 Claims**



1. A high speed printer, comprising:

a frame;

a platen mounted in an axially fixed position on said frame;

a print head mounted on a carriage;

a pair of guide rods mounted on said frame for reciprocally supporting said carriage, one of said rods being adjustable relative to said frame in a direction tangential to the other one of said rods, said adjustability permitting said carriage to rotate about the other of said rods to alter the space between said print head and said platen to accommodate a variety of paper thicknesses in said printer; and

means for compensating for movement of said one of said rods in a radial direction relative said other one of said rods to prevent alteration of the space between said print head and said platen due to such radial movement, said compensating means comprising:

a bushing rotatable on said one of said rods, said bushing having a depression therein;

a ball joint member attached to said carriage and rotatable in said depression on said bushing; and

a clamp for securing said ball joint member to said bushing.

4,268,178

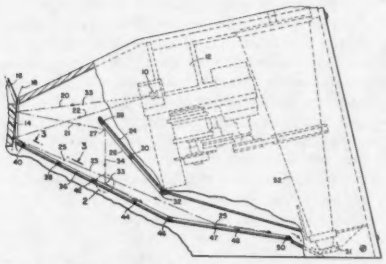
ANTI-BOUNCE PROJECTILE COLLECTING SURFACE FOR MICROBALLISTIC PRINTER

Benzion Landa, Edmonton, Canada, assignor to Savin Corporation, Valhalla, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,884

Int. Cl.³ B41J *3/02*

U.S. Cl. 400—118 **6 Claims**



2. In a microballistic printer in which solid projectiles are propelled against a printing medium supported against a platen and the projectiles collected for recycling by a collector, said collector having a wall normally struck by projectiles rebounding from the platen, the improvement comprising a thin and flexible sheet of material and means for supporting said sheet in spaced relationship with said wall of the collector to inhibit bouncing of projectiles therefrom.

4,268,179

METHOD AND SYSTEM FOR REPRODUCING IDENTIFICATION CHARACTERS

George R. Long, Newark, and Michael C. Smayling, Wilmington, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 29, 1979, Ser. No. 88,840

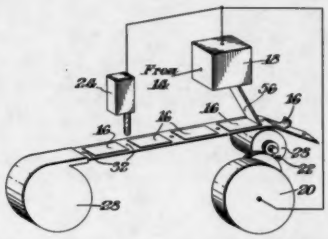
Int. Cl.³ B41J *3/20*

U.S. Cl. 400—120 **13 Claims**

1. A method of reproducing identification characters from a first substrate on a second substrate that are both man and machine readable using a dot matrix printer and an optical character reader comprising the steps of:

scanning the characters on said first substrate with said optical character reader to obtain information as to said identification characters,

transmitting said information to control said dot matrix printer in accordance with said information on said first substrate to form characters of a matrix of dots, at least some of which overlap, so that said characters have apparent solid lines that are capable of being read with an optical character reader.



4,268,180

DOT PRINTER WIRE

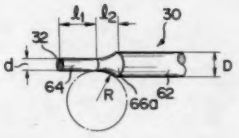
Hiroshi Honma, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 15, 1979, Ser. No. 84,577

Claims priority, application Japan, Oct. 20, 1978, 53-144337[U]; Oct. 20, 1978, 53-144339[U]

Int. Cl.³ B41J *3/12*

U.S. Cl. 400—124 **3 Claims**



1. A dot printer wire which comprises a round rod shaped forward section, intermediate section and a base section integrally and concentrically formed in the order mentioned as counted from one end to the other, and wherein the forward section is provided with a printing portion at the foremost end; the base section has a larger diameter than the forward section; the intermediate section has the same diameter as the smaller diameter forward section at the junction therewith and the same diameter as the larger diameter base section at the junction therewith, and the intermediate section is shaped to a form whose peripheral surface is inwardly curved.

4,268,181

INK AND ERROR CORRECTION RIBBON ASSEMBLY

Herbert Decker, Lauf, Fed. Rep. of Germany, assignor to Triumph-Werke Nurnberg A.G., Nuremberg, Fed. Rep. of Germany

Filed Feb. 19, 1980, Ser. No. 122,651

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1979, 2909231

Int. Cl.³ B41J *35/28*

U.S. Cl. 400—208 **4 Claims**

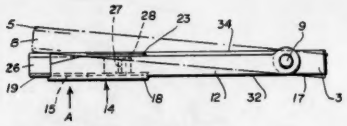
1. In combination,

an inked ribbon casette having spaced guide arms extending therefrom and supporting an inked ribbon for movement across said spaced arms,

means supporting said cassette for bodily movement about a horizontal axis, and

a correction ribbon holder having spaced guides and supporting an error correction ribbon for movement across said spaced guides outwardly of said inked ribbon arms,

said correction ribbon holder including support arms embracing and pivotally supported about said horizontal axis



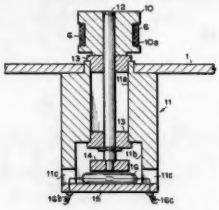
whereby said ink ribbon cassette can be pivoted independently of said correction ribbon holder.

4,268,182

DEVICE FOR DETECTING TRAVEL CONDITION OF INKRIBBON FOR PRINTERS

Nagao Mizutani, Hachiouji; Yasuo Okawara, Sayama, and Toshikazu Shimazaki, Tanashi, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 834,295, Sep. 19, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,778
Claims priority, application Japan, Sep. 28, 1976, 51-115054
Int. Cl.[3] B41J *35/36*
U.S. Cl. 400—247 **9 Claims**



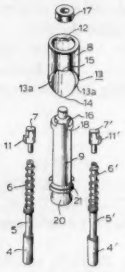
1. In a printer having:
a pulse motor rotatable by a particular angle responsive to a driving pulse;
pulse generating means for generating driving pulses for said pulse motor; and
carrier means for a printer head, the carrier means reciprocated adjacent a printing medium by said pulse motor;
the improvement comprising:
a device for detecting a travel condition of an inkribbon comprising:
(a) means associated with said carrier means for feeding said inkribbon in response to reciprocation of said carrier by said pulse motor;
(b) means for generating a detection signal responsive to each predetermined amount of travel of said inkribbon, said means for generating a detection signal being engaged by and movable in response to travel of said inkribbon,
(c) preset counter means for comparing the number of said driving pulses generated between successive ones of said detection signals with a predetermined value, said preset counter means having:
(1) a first count input receiving said driving pulses,
(2) a second reset input receiving said detection signal for resetting a count number while counting; and
(3) an output for transmitting a signal upon said preset counter means reaching a preset value;
(d) a gate circuit connected between said pulse generating means and means responsive to said output signal of said preset counter means for detecting a return operation of said carrier and for preventing said driving pulses from being input to said preset counter means;
whereby an output signal is generated by said preset counter means whenever a predetermined number of driving pulses is generated for reciprocating said carrier means and for feeding said inkribbon without generation of a detection signal indicative of inkribbon travel.

4,268,183

COMPOSITE WRITING INSTRUMENT

Kazuhiko Sekiguchi, Tokyo, Japan, assignor to Zebra Co., Ltd., Tokyo, Japan

Filed Sep. 10, 1979, Ser. No. 74,405
Int. Cl.[3] B43K *27/14*
U.S. Cl. 401—30 **2 Claims**



1. A composite writing instrument comprising:
a tubular casing having an opening in the lower end thereof;
two writing units accommodated within said casing and spaced from each other by about 180° and movable between an advanced writing position in which the tip of the unit projects through said opening in the lower end of said tubular casing and a retracted position in which the unit is fully withdrawn into said lower tubular casing;
an upper tubular casing rotatably mounted on said lower tubular casing for rotation around the longitudinal axis of said lower tubular casing; and
a cam mechanism within said upper tubular casing and rotatable around the axis of said lower tubular casing with said upper tubular casing through a limited angle of rotation and engaged with both of said writing units for alternately shifting said units in the axial direction between the advanced writing position and the retracted position, said cam mechanism comprising a curved casing within said upper tubular casing and rotatable with said upper tubular casing, a guide casing within said curved casing and fixed relative to said lower tubular casing and around which said curved casing is rotatable and having lengthwise grooves therein in which said two writing units are engaged for guiding said writing units in the axial direction of said instrument, and said curved casing having a cam face with an upper flat portion and two inclined portions extending symmetrically downward from both ends of said flat portion to a pointed tip, a slider on the upper end of each of said writing units and engaged with said cam face, and rotation limiting means operatively associated with said curved casing and said guide sleeve to slightly more than 90° in opposite rotational directions from a position in which both writing units are in an intermediate position within said lower tubular casing and said sliders are engaged with the respective inclined portions, the flat portion being about 90° along said cam face from said pointed tip, whereby when the curved casing is rotated in either direction from said position, one of said sliders is caused to slide downwardly along the associated inclined portion and just past the pointed tip to engage the other inclined portion, and the other slider is caused to slide upwardly along the associated inclined portion and to engage said upper flat portion, and the writing unit on

which said one slider is mounted is moved to the writing position and held there and the writing unit on which the other slider is mounted is moved to the retracted position.

4,268,184

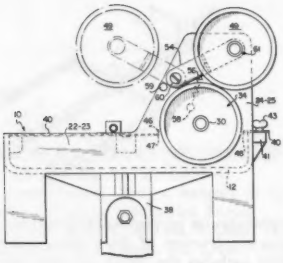
TWIN ROLLER PAINT APPLICATOR

Wah Sheck, 18304 Wachs Ter., Olney, Md. 20832, and Al Lukevics, 7814 Baxter Ct., Annandale, Va. 22003

Filed Jun. 8, 1979, Ser. No. 46,671

Int. Cl.[3] **B43M** *11/02*

U.S. Cl. 401—218 **11 Claims**



1. A manually operated fountain feed coating device having a surface coating applicator roller and a fountain feeder roller in peripheral contact with the exterior surface of the coating applicator roller, said rollers each having a drive shaft, a reservoir for supplying a coating product to said fountain feeder, said reservoir having side, end and bottom portions, one side of said reservoir being provided with a projection, said shaft of each roller having bearing ends journalled to rotate in said side portions, said applicator roller being rotatable by its own traction on a surface to be coated when manually pressed against said surface and manually moved with said reservoir over the surface, a traction wheel journalled in at least one of said side portions outboard of said reservoir, and a link coupled at a first end to said traction wheel and to said reservoir at a second end, and off-center spring means connected at one end intermediate said link, the other end of said spring being connected to said projection, said link and spring facilitating the disconnection of said traction wheel from said applicator roller, said traction wheel being engageable with the dry uncoated surface at the side of a fresh wet coated area of the surface being traversed and coated by said applicator roller, said traction wheel being coupled to the drive shaft of said applicator roller to impart rotation thereto;

said traction wheel being in driving contact with an idler wheel keyed to the shaft end of said fountain feeder roller drive shaft;

said traction wheel being provided with a quick disconnect means for disengaging said traction wheel from said applicator roller drive shaft and for disconnecting said traction wheel from said idler wheel to thereby permit said applicator roller to be rotated independently from said traction wheel.

4,268,185

MOUNTING ATTACHMENT

Ralph Müllenberg, Im Wiesengrund 6, 4048 Grevenbroich, Fed. Rep. of Germany

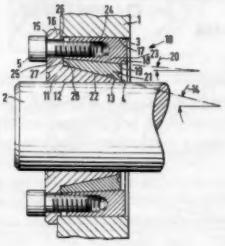
Filed Aug. 3, 1978, Ser. No. 930,872

Claims priority, application Fed. Rep. of Germany, Aug. 2, 1977, 27347848

Int. Cl.[2] **F16D** *1/06*

U.S. Cl. 403—16 **17 Claims**

1. Clamping assembly for physical connection of a cylindric recess of an outer member, especially of a hub, to an inner member, especially a shaft, in coaxial relation to the recess, the inner member having a cylindric outer surface, the assembly comprising: an inner taper ring having a cylindric inner peripheral surface and an outer peripheral surface formed as a taper surface, an outer taper ring having a cylindric outer peripheral surface and an inner peripheral surface formed as a taper surface, and an intermediate taper ring with inner and outer peripheral surfaces formed as taper surfaces interacting with the inner and outer taper surfaces of the other taper rings to provide at least two pairs of interacting taper surfaces, there being a self-locking angle which defines a self-locking range within which self-locking of the taper surfaces takes place, the taper angle of one of said pairs of taper surfaces being less than the self-locking angle by a certain angular amount while the taper angle of the other of said pairs of taper surfaces is greater than



the self-locking angle by a particular angular amount, so that, of the inner and outer taper rings, one has a taper surface at an angle within the self-locking range and the other has a taper surface at an angle greater than such range and so that the intermediate taper ring has one taper surface at an angle within the self-locking range and another taper surface at an angle greater than such range, said particular angular amount being greater than said certain angular amount; and axially oriented clamping bolts axially clamping the intermediate taper ring against the inner and outer taper rings, the vertexes of the taper angles of the intermediate taper ring both being located on the same side of the taper ring and the clamping bolts grip that one of the inner and outer taper rings having the taper angle located within the self-locking range.

4,268,186

ROAD GUARD BELT

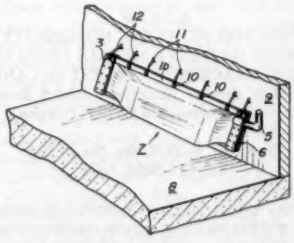
Kuninori Aramaki, and Shigeo Ueda, both of Yokohama, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 16, 1979, Ser. No. 85,348

Claims priority, application Japan, Oct. 20, 1978, 53-144406[U]; Jul. 11, 1979, 54-95260[U]

Int. Cl.[3] **E01F** *15/00*

U.S. Cl. 404—6 **3 Claims**



1. A road guard belt comprising; a hollow belt-shaped body composed of an inflatable portion molded into one integral belt and adapted to be inflated into an elongated tubular body by

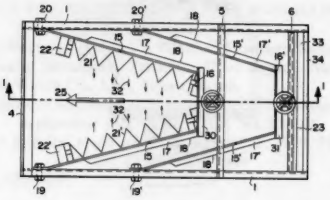
introducing fluid therein, said hollow belt-shaped body being closed at its both ends and fitted to a road wall side facing a road, said inflatable portion being provided at a proper position with a throttle hole, whereby fluid filling said inflated portion is discharged therefrom through said throttle hole when said inflated portion is subjected to outside pressure.

4,268,187

DRAG-TYPE SPREADING APPARATUS FOR ROAD CONSTRUCTION MIXTURES

Ulrich Krause, Prinz Christianweg 13, and Peter Krause, Park Rosenhoehe 4, both of 61 Darmstadt, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,622
Claims priority, application Austria, Nov. 7, 1977, 7949/77
Int. Cl.³ E01C *19/22*
U.S. Cl. 404—118 **3 Claims**



1. A drag-type spreading apparatus for placing road mixtures in a road surface by advancing the apparatus in a working direction, comprising skid means extending substantially in parallel to the working direction, frame means including connecting means rigidly connecting and spacing said skid means to said frame means, said apparatus further comprising screeding means, securing means operatively attaching said screeding means to said frame means whereby said screeding means are adjustable, said screeding means comprising first and second screeding members each with screeding wall means including lateral screeding wall means and rear screeding wall means forming a configuration opening in the working direction, first and second worm type conveyor means operatively connected to and extending in parallel to the respective one of said lateral screeding wall means of at least one of said screeding members, and drive means operatively connected to said first and second worm type conveyor means for rotating said first and second worm type conveyor means in opposite directions, said first and second worm type conveyor means being constructed to have a feed direction (32) inwardly away from said screeding wall means (15), whereby said first and second worm type conveyor means advance said road mixture in the working direction and inwardly away from said lateral screeding wall means to reduce the pressure of the road mixture at the gap between the road surface and the lower edge of the screeding wall means where the road mixture passes into grooves or holes in the road surface.

4,268,188

PROCESS FOR REDUCING POSSIBILITY OF LEACHING OF HEAVY METALS FROM USED PETROLEUM CRACKING CATALYST IN LAND FILLS

Dwight L. McKay, Brent J. Bertus; and John S. Roberts, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 6, 1979, Ser. No. 64,282
Int. Cl.³ B09B *1/00*
U.S. Cl. 405—128 **5 Claims**

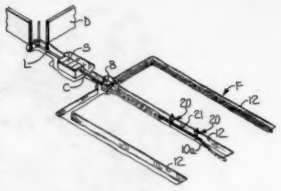
1. A process for discarding a used catalyst or contact mass to be discarded and having thereon metal resulting from its use as a petroleum conversion catalyst, said metal being leachable therefrom with water, which comprises treating said catalyst just prior to its discard with at least one of tin, indium, a compound of tin, and a compound of indium in an amount sufficient and in a manner to stabilize against leaching of metals thereon by ground water and then discarding said catalyst to a place at which ground water exists.

4,268,189

APPARATUS AND METHOD FOR SUPPORTING AND POSITIONING PIPE DURING THE CONSTRUCTION OF DRAIN FIELDS AND THE LIKE

William C. Good, Rte. 1, Great Falls, S.C. 29005

Filed Sep. 26, 1979, Ser. No. 79,117
Int. Cl.³ B63B *35/04*
U.S. Cl. 405—154 **19 Claims**



1. An apparatus for supporting pipe sections in desired position during construction of drain fields and the like which construction includes the laying of connected pipe sections with surrounding aggregate on a grade surface below ground level, said apparatus comprising:

(a) an elongate, generally horizontally disposed support member;

(b) clamping means carried by said support member at spaced apart locations along the length thereof for receiving and clampingly supporting at least one pipe section parallel to and suspended from said support member; and

(c) positioning means disposed at spaced points along said support member and adapted to penetrate into the grade surface for positioning said support member at the proper height above grade and for anchoring said support member in position during clamping of the pipe section, pouring and spreading of the aggregate, and releasing of the embedded pipe section.

4,268,190

PIPE HANDLING METHOD AND APPARATUS

Prosper A. Tesson, 11942 Summerdale, Houston, Tex. 77079

Division of Ser. No. 842,237, Oct. 14, 1977. This application Jan. 18, 1980, Ser. No. 113,704
Int. Cl.³ B23P *19/04*; B23K *37/04*; F16L *1/04*
U.S. Cl. 405—169 **3 Claims**

1. A pipe stabber frame for engaging a tubular coupler with a pipe comprising:

a pair of vertical legs spaced apart so as to accomodate between them a pipe to be handled;

a cross-header beam extending between and rigidly attached to the upper ends of said legs;

base means for supporting the lower end of each of said legs from the ocean floor;

a horizontal traveling beam extending between said legs parallel to said cross-header beam and adjustable vertically;

hydraulic power means for adjusting said horizontal traveling beam vertically relative to said legs;

stabber beam support means carried by said traveling beam;

hydraulic power means for moving said stabber beam sup-

port means horizontally across said horizontal traveling beam between said legs;

elongated stabber beam means extending generally perpendicular to said horizontal travel beam supported at one end by said stabber beam support means and having support means at its other end for alignment and supporting said other end of said stabber beam in relation to a pipe in connection with which said stabber frame is used; and

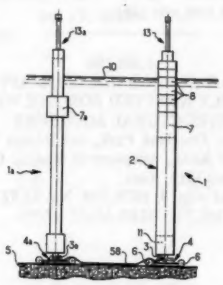
trolley means movable longitudinally along said stabber means for carrying and selectively positioning a tubular coupler carried thereby with respect to said pipe.

4,268,191

STAND-BY SERVICE STRUCTURE FOR CASUAL OFF-SHORE ATTENDANCE

Samuel Tuson, Mesnil-Le-Roi, France, assignor to Entreprise d'Equipments Mecaniques et Hydraulics, France

Filed Jun. 23, 1978, Ser. No. 918,688
Claims priority, application France, Jul. 1, 1977, 77 20392
Int. Cl.[3] B63C *11/00, 11/52*
U.S. Cl. 405—195 **18 Claims**



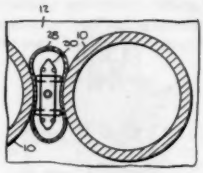
1. A service structure for attendance work on the sea-bed, of the type comprising an emergent articulate column having an emergent upper portion, said column being pivotally connected through a connecting device at its submerged bottom end to a base member resting on said sea-bed; said column including a hollow shaft extending between the emergent portion and base member of the column to constitute means for accomplishing transfer functions between the sea-bed and the water surface; said base members being provided with a workshop caisson for allowing work to be performed on sections of an underwater pipeline resting on the sea-bed or within an excavation thereof, said workshop caisson including at least one bottom opening providing access to the sea-bed and means for sealing said caisson in fluid-tight relationship so that it directly communicates at least temporarily with the outer atmosphere at the water surface through said hollow shaft which forms a ventilating duct; wherein said workshop caisson is of a substantially elongated shape and includes a bottom in which said bottom opening is formed, means extending over substantially the entire length of said bottom for sealingly closing said bottom opening, two transverse opposed end walls, each of which is formed with an opening which merges downwardly into the bottom opening, means for sealingly closing said end wall openings, said workshop caisson further comprising movable gripping members for gripping and inserting into the caisson through said bottom and end wall openings at least one portion of a pipe-line section.

4,268,192

CONCRETE WALL CONSTRUCTION

Ervin R. Colle, Haddon Field, N.J., assignor to Raymond International Builders, Inc., Houston, Tex.

Filed Sep. 11, 1978, Ser. No. 940,967
Int. Cl.[3] E02D *29/00, 27/16*
U.S. Cl. 405—239 **21 Claims**



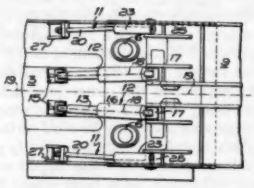
1. A concrete wall structure comprising a plurality of concrete piles of cylindrical cross section positioned adjacent each other and extending into and supported by a supporting bed in the earth and elongated filler elements arranged in the spaces between adjacent ones of said piles and above said supporting bed, each filler element including a framework cage and a hardenable substance encased within an elongated tubular bag, said framework cage being arranged and configured with portions positioned on the opposite sides of the smallest span between adjacent cylinder piles and having a greater dimension on each side of said span than the span itself, said filler elements also having an hourglass shaped cross section which conforms to the shape of and abuts against the outer wall surfaces of adjacent ones of said concrete piles.

4,268,193

MINE ROOF SUPPORTS

John C. Smith, Wakefield, England, assignor to Fletcher Sutcliffe Wild Limited, Great Britain

Filed Nov. 29, 1979, Ser. No. 99,009
Int. Cl.[3] E21D *15/44*
U.S. Cl. 405—292 **7 Claims**

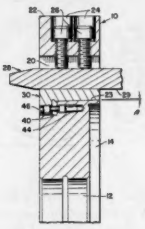


1. A mine roof support comprising at least one roof beam and at least one base member, a plurality of hydraulically extensible chock legs articulated at upper ends thereof to said roof beam and at lower ends to said base member, a shield pivotally connected to a rearward part of said base member and also pivotally connected to a rearward part of said roof beam, permanently pressurised rams, both located between a pair of said chock legs which are laterally spaced and one located to each side of the center line of said support, said rams being mutually inclined with respect to said center line and reacting via said shield on said roof beam in such a manner that said rams resist displacement of said roof beam and, upon retraction of said chock legs from a mine roof, restore displaced chock legs to a predetermined position, and a pair of tie bars located one towards each side of said support and both connected between said roof beam and said shield, said tie bars readily allowing mutual convergence of said roof beam and said shield, and also determining the length of effectiveness of said rams and hence maximum allowable separation between said roof beam and said shield at each side of said support.

4,268,194
INDEPENDENT AXIAL AND RADIAL ADJUSTMENT FOR A GEAR CUTTER

Harry W. Bloink, Redford, and Walter G. Huber, St. Clair Shores, both of Mich., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed May 21, 1979, Ser. No. 40,816
Int. Cl.³ B26D *1/12*
U.S. Cl. 407—22 **9 Claims**



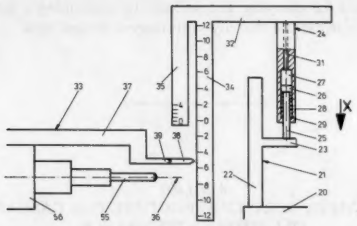
1. In a roughing milling cutter for machining hypoid gears and the like, said cutter having a generally cylindrical body with a substantially planar front face and having a plurality of slots for receiving a plurality of sets of cutter blades having their cutting edges projecting laterally outwardly from the body front face with no portion of the blades extending radially beyond the periphery of the cylindrical body, each respective set of blades being specially designed to machine a specific portion of a gear tooth, said milling cutter being mountable for rotation about its longitudinal central axis and the slots having a radially inward tapered surface forming an acute angle with the central axis, the improvement comprising means to permit adjustment of each cutter blade in a direction generally parallel to the axis of the cutter body and independently adjustable means to permit limited adjustment of each blade in a direction which is generally perpendicular to said axis, each said independently adjustable means including a recess radially inward of the slot and adjacent the body forward surface, an adjustment block having a tapering main portion and a laterally extending attaching finger, said main portion having a first planar surface for engaging a blade and a second planar surface opposite said first surface for engaging the slot tapered surface and forming an acute angle with a plane perpendicular to said first surface and which is complementary to the acute angle of the slot tapered surface to extend said first surface and the blade generally parallel to the cutter longitudinal axis, said attaching finger being received within said recess so as to be behind or coplanar with said body forward surface and including a first aperture therein extending generally parallel to the axis of the adjustment block and being tapped with a thread, a second aperture within said cutter body which is aligned with said first aperture and tapped in a direction opposite the tap of said first aperture, and a differential screw in threaded engagement in both said first and second apertures and countersunk within said first aperture so as to be behind said body forward surface, whereby, in operation, rotation of said differential screw causes axial displacement between the cutter body and adjustment block and, due to the complementary tapers thereon, causes radial displacement of the adjustment block first surface and, correspondingly, of the cutter blade.

4,268,195
APPARATUS FOR MAKING HOLES IN ARM SECTIONS OF STRUCTURAL COMPONENTS

Ludwig Regenbrecht, Gevelsberg, Fed. Rep. of Germany, assignor to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

Filed Dec. 17, 1979, Ser. No. 104,074
Int. Cl.³ B23B *49/00*; B26D *5/00, 7/27*
U.S. Cl. 408—16 **5 Claims**

1. Apparatus for making holes in arm sections of structural components which are transportable by a conveyor device which constitutes a reference plane for a web section of a structural component, with reference to the top side of which a sensor element of a sensing device is vertically movable which is connected to an indicator device for the indication of an interval, if any, existing between the web section of the structural component and the reference plane, whilst a perforating device for making a hole in an arm section of the structural component is movable into a desired relative position to

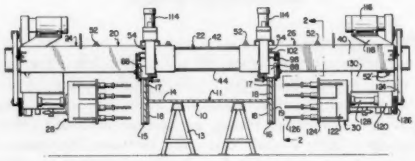


the indicator device and is precisely alignable with reference to the web section in proximity of the arm section of the structural component, characterised in that a vertical gauge (**34**) of the indicator device is firmly connected to the sensing device and extends parallel at an interval beside the latter, and that there is associated with the gauge (**34**) an index (**38**) which is attached to the perforating device at a specific interval from and parallel to its tool axis (**36**).

4,268,196
WORK-PIECE SUPPORTED TOOL APPARATUS PARTICULARLY ADAPTED FOR USE WITH LARGE STRUCTURAL MEMBERS

James E. Harrow, Overland Park, and Robert T. Kenney, II, Olathe, both of Kans., assignors to Kansas City Structural Steel Co., Kansas City, Kans.

Filed Aug. 3, 1979, Ser. No. 63,522
Int. Cl.³ B23B *39/22, 41/00*
U.S. Cl. 408—39 **9 Claims**



1. Work-piece supported apparatus for performing machine tool operations upon a work-piece having a pair of spaced, upstanding, flange portions presenting a pair of substantially parallel, elongate, track surfaces, said apparatus including:

elongate beam means disposable transversely to said track surfaces;

carrier means shiftably mounted on said beam means for selective positioning along the length of the latter, said carrier means including a pair of carrier assemblies independently shiftable on said beam means for selective positioning along the length of the latter;

machine tool means supported by said carrier means and having powered, movable parts for operatively engaging said work-piece to perform machine tool operations on the latter, said machine tool means including a pair of tool assemblies each supported by a corresponding carrier assembly; and

wheel means, said wheel means including a pair of sets of wheels and means for mounting each of said sets of wheels upon a corresponding carrier assembly,

said carrier assemblies being selectively shiftable to positions along said beam means for disposing each of said sets of wheels in supported engagement upon a corresponding one of said track surfaces, whereby said beam means, said carrier means and said tool means are shiftably supported by said wheel means upon said track surfaces of said work-piece for selective positioning thereof along the length of the latter,

said means for mounting each of said sets of wheels upon the corresponding carrier assembly including powered extensible means for vertically shifting the positions of each of said sets of wheels relative to the corresponding carrier assembly, whereby the positions of said beam means, said carrier means and said tool means are vertically adjustable relative to said work-piece,

each of said sets of wheels including a pair of wheels each provided with a separate and independently controllable extensible means for shifting its relative vertical positioning with respect to the associated carrier assembly, whereby said beam means, said carrier means and said tool means may be selectively tilted about an axis transverse to said track surfaces.

4,268,197

DEEP DRILLING TOOL

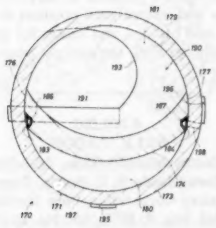
Karl Burgsmüller, Haus Hainberg, 3350 Kreiensen, Fed. Rep. of Germany

Filed May 19, 1978, Ser. No. 907,865

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724266

Int. Cl.[3] **B23B** *51/04*

U.S. Cl. 408—59 **14 Claims**



1. In a deep drilling tool for workpieces including a tubular drill bit and a tubular drill stem connectable to the drill bit and having an inner wall, a combination comprising a longitudinal partition having lateral surfaces and dividing the interior of said stem in at least two separate passages, at least one of said passages forming a pressure fluid feeding passage communicating with an exterior surface of said tool, and another of said passages forming a discharge passage for a mixture of said pressure fluid and the drilling chips and communicating with the interior of said drill bit; and an elastic sealing member at each of said lateral surfaces of said partition and in slidable contact with the inner wall of said drill stem.

4,268,198

INDEXABLE INSERT DRILL

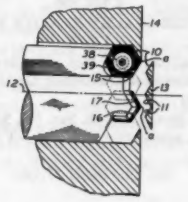
Robert W. Peters, Saegertown, Pa., assignor to Greenleaf Corporation, Saegertown, Pa.

Filed Mar. 26, 1979, Ser. No. 23,707

Int. Cl.[3] **B23B** *51/00*

U.S. Cl. 408—186 **6 Claims**

1. A drill having shank with chip removing flutes respectively on opposite sides of the forward end of the shank, indexable inserts mounted in one and the other of said flutes, each insert having a forwardly projecting cutting point in active cutting position, said cutting points being different radial distances from the axis of the shank and comprising a radially outermost cutting point having the greatest radial distance from the axis of the shank and a radially innermost cutting point having the least radial distance from the axis of the shank, each point having an inner active work engaging cutting edge inclined toward the axis of the shank and an outer active work engaging cutting edge inclined away from the axis of the shank, said edges diverging rearwardly from each point and generating inner and outer annular surfaces of revolution by rotation of the shank about its axis, the outer annular surface of revolution of the radially outermost cutting point having a maximum outside diameter equal to the outside diameter of the hole to be drilled, the inner annular surface of revolution of the



radially innermost cutting point partially overlapping the axis of the shank, the other surfaces of revolution each partially overlapping a surface of revolution of the next adjacent insert, each insert being oriented so the non-overlapping portions of the inner and outer edges of its cutting point machines inner and outer sides of a different one of a plurality of radially spaced adjoining concentric grooves having sides corresponding to the non-overlapping portions of said inner and outer annular surfaces of revolution, the non-overlapping portions of the cutting edges which generate said outer annular surfaces each exerting a radial cutting thrust on the shank, and means for equalizing said radial cutting thrusts.

4,268,199

TRAILER FOR THE AUTOMATIC LOADING AND UNLOADING OF ROUND BALES

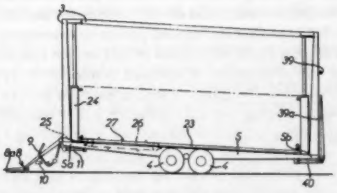
Albert D. Fontrier, c/o Benac-Berdoues, France, assignor to Ets Benac & Fils S.A., France

Filed Apr. 2, 1979, Ser. No. 25,993

Claims priority, application France, Apr. 11, 1978, 78 10603; Sep. 4, 1978, 78 25371

Int. Cl.[3] **A01D** *87/12;* **B60P** *1/50*

U.S. Cl. 414—24.5 **7 Claims**



1. A loader for automatically loading forage bales comprising a frame supported by wheels, a main platform carried by said frame, at least one secondary platform movable parallel to said main platform, a bale pick-up fork pivoted to the front edge of said main platform and movable from a lower position for picking up bales lying on the ground to an upper position in which the bales are loaded on said main platform, a pivotably mounted lever, spring means for normally urging said lever to an inoperative position ahead of said fork for detecting the presence of a bale, a hydraulic valve responsive to the movement of said lever, a tipping cylinder responsive to said valve and operably connected to said fork to actuate same, a rake pivotably mounted on the front of said frame and above said fork and adapted to retain the bales on said fork, said rake

being operably connected to said lever and responsive to the movement of said lever at the very beginning of the pivotal movement of said fork to drop upon the forage bale, and means for transferring the loaded bales towards said platforms.

4,268,200

APPARATUS FOR STACKING NOTE BOOKS OR THE LIKE

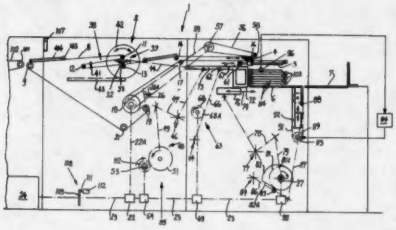
Paul Fabrig, Neuffen, Fed. Rep. of Germany, assignor to Womako Maschinenkonstruktionen GmbH, Nürtingen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,831

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752372

Int. Cl.³ B65G *57/081*

U.S. Cl. 414—31 **3 Claims**



1. Apparatus for manipulating substantially flat commodities, particularly pads each of which has a first portion whose thickness deviates from the thickness of at least one second portion thereof, comprising a stacking device; means for transporting a succession of commodities in identical orientation in a predetermined direction and along a predetermined path onto said stacking device where successive commodities descend on top of each other to form a growing stack, including at least one endless flexible element; stop means disposed above said device and positioned to arrest successive commodities prior to descent onto said device; means for moving said stop means between first and second positions; orientation changing means adjacent said path ahead of said device and actuatable to change the orientation of selected commodities in said path, said orientation changing means including a pocket having an opening and being movable between a first position in which said opening is located in the path of an oncoming commodity and a second position in which said opening allows the commodity to leave said pocket by moving in said direction, and pulleys for said flexible element, said pulleys being mounted in said pocket to confine successive portions of said flexible element to movement first into and thereupon from said pocket so that said element entrains an oncoming commodity into said pocket by way of said opening in the first position of said pocket and from said pocket via said opening in the second position of said pocket; means for actuating said orientation changing means, including means for pivoting said pocket about an axis which is substantially normal to said direction; and control means for synchronizing the operation of said actuating and moving means so that said stop means assumes one of said positions prior to engagement with commodities whose orientation remained unchanged and the other of said positions prior to engagement with commodities whose orientation has been changed by said orientation changing means.

4,268,201

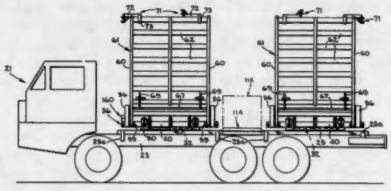
UNITIZING SYSTEM FOR PRODUCE CARTONS AND THE LIKE

David W. Cayton, Cupertino, Calif., assignor to Bud Antle, Inc., Salinas, Calif.

Filed May 7, 1979, Ser. No. 36,564

Int. Cl.³ B65G *57/24;* B60P *7/06*

U.S. Cl. 414—35 **19 Claims**



1. Apparatus for facilitating organization and transport of a plurality of generally parallelepiped shaped cartons comprising a rectangular platform defining a carton supporting surface and having first and second mutually parallel side edges and a pair of mutually parallel end edges perpendicular to the side edges, means for mounting the platform on a vehicle bed for rotative movement about a generally vertical axis between a loading position at which the side edges are oriented longitudinally of the vehicle bed and an unloading position at which the end edges are oriented longitudinally of the vehicle bed, first and second generally planar side walls being mounted to respective said side edges of said platform for movement between an inward upright position to support cartons disposed on said platform and an outward position at which said side walls disengage said cartons, and means for controllably moving said side walls between the upright position and the outward position.

4,268,202

BALE WAGON

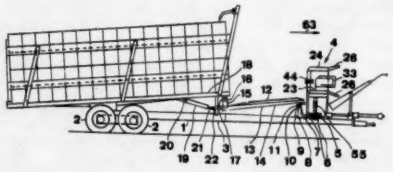
Serge J. C. Verdenne, Marcilly-Tille; Jean-Marie L. Petitpas, Longvic, and Jean-Claude A. E. Boirin, Binges, all of France, assignors to Sperry Corporation, New Holland, Pa.

Filed Aug. 9, 1979, Ser. No. 64,950

Claims priority, application United Kingdom, Aug. 16, 1978, 33517/78

Int. Cl.³ A01D *87/12;* B60P *1/36;* B65G *57/32*

U.S. Cl. 414—39 **8 Claims**



1. In a bale wagon having a mobile frame; a bale loader pivotally mounted on said frame and being selectively positionable between an operating position adjacent the ground to receive and elevate bales and a raised transport position, said bale loader having a bale pick-up end positioned adjacent the ground when in said operating position and a discharge end elevated above said bale pick-up end when in said operating position; a bale receiving table mounted on said frame transverse to the direction of travel of said bale wagon, said bale receiving table having a first end positioned adjacent to said discharge end of said bale loader to receive bales discharged therefrom and a remote second end; a conveyor associated with said first end of said bale receiving table and being operable to convey bales along said bale receiving table from said

first end toward said second end; and drive means for powering said bale loader and said conveyor, the improvement comprising:

said conveyor being fixedly mounted with said bale loader and pivotable about a first pivot axis between said first end of said bale receiving table and said second end such that said discharge end of said bale loader maintains a fixed positional relationship with said conveyor during pivotal movement of said bale loader between said operating position and said transport position, said bale loader being pivotable with said conveyor about said first pivot axis between said first end and said second end.

4,268,203

RECEIVING AND COLLECTING PIECES OF STOCK SUCH AS RODS OR TUBES

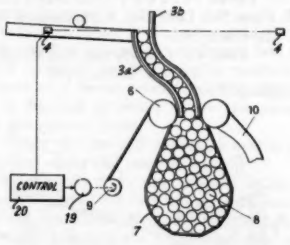
Walter Huber, and Wolfgang Stratenhoff, both of Muelheim, Fed. Rep. of Germany, assignors to Mannesmann Aktiengesellschaft, Duesseldorf, Fed. Rep. of Germany

Filed Aug. 6, 1979, Ser. No. 63,752

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1978, 2834874

Int. Cl.[3] **B65G** *1/08*

U.S. Cl. 414—100 **4 Claims**



1. Low-noise, tube- or rod-collecting and bundling device to be placed adjacent to the end of a slanted track means, comprising:

means, defining a curved duct and having its upper entrance disposed at said end and having members being stationary during operation and covered with a noise-attenuating material, the duct having a width corresponding to the diameter of the tubes or rods and further having a lower exit;

a plurality of extendable belts disposed for extending adjacent to said exit, there being means for paying out the belts to obtain loops below the exit; and

means for increasing the size of the loops so that the belt loops receive the tubes or rods as they arrive on the track and through the duct.

4,268,204

CONTINUOUS SHIP UNLOADER

Samuel K. Stellfox, and Hermann Urban, both of Pittsburgh, Pa., assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Mar. 29, 1979, Ser. No. 24,991

Int. Cl.[3] **B65G** *63/00*

U.S. Cl. 414—139 **7 Claims**

1. In a continuous unloader of the type especially useful for transferring bulk cargo from the hold of a ship positioned alongside the unloader to shore, the unloader comprising a gantry movable on a track generally parallel with a ship positioned alongside the track for unloading, the gantry having a vertical support mounted thereon, the invention wherein:

(a) there is a lever pivotally mounted between its ends on the support for movement in a vertical arc with one end extending toward the shipside of the track and the other end disposed on the opposite or landside of the track, the landside of the lever having a counterweight thereon;

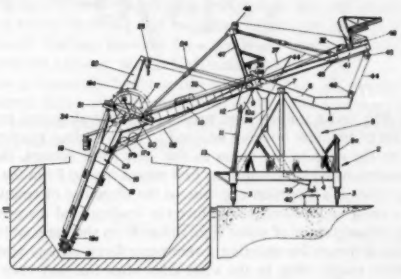
(b) a boom pivotally supported between its ends on the shipside end of said lever for movement on the lever about an axis parallel with the pivotal axis of the lever on the support whereby the boom will be moved with the lever on which it is carried when said lever is rocked about its pivotal axis and which also may be rocked about its own pivotal axis on the shipside end of the lever;

(c) means arranged for controllable rocking and holding of the lever in an adjusted position relative to the gantry and means arranged for controllably adjusting the boom about its pivotal axis on the lever and holding it in adjusted position relative to the lever;

(d) a digging arm pivotally suspended from the shipside end of the boom for movement in an arc crosswise of the hold of a ship being unloaded;

(e) means arranged to controllably effect said arcuate movement of the digging arm relative to the boom;

(f) said lever and boom being movable through an operating range where the digging arm may enter and be moved



crosswise of the ship's hold and be lowered and raised relative to said hold as required to remove material from the hold to an inoperative position where the digging arm hangs vertically clear of the ship and closer inshore toward the gantry;

(g) a counterweight on the landside end of the boom, the arrangement thereby assuring that as the shipside ends of said lever and boom are raised to lift the digging arm clear of the ship and move it inwardly toward the gantry, the respective counterweights on the lever and boom will swing inwardly toward the support to maintain the center of balance close to the vertical center line of the support; and

(h) the digging arm having a continuous elevating conveyor arranged to gather bulk material at its lower end when it is in operating position and discharge said bulk material at its upper end, the boom having a conveyor arranged to receive bulk material from the upper end of the elevating conveyor when it is in operating position and discharge it at any angle in its operating range to fixed receiving means on the gantry.

4,268,205

METHOD AND APPARATUS FOR REMOVING MATERIAL FROM THE ENDS OF A ROTARY AIR LOCK

Miguel Vacca, South Euclid, and James C. Morris, Twinsburg, both of Ohio, assignors to Mayfran, Div. of Fischer Industries, Inc., Cleveland, Ohio

Filed Jun. 7, 1979, Ser. No. 46,239

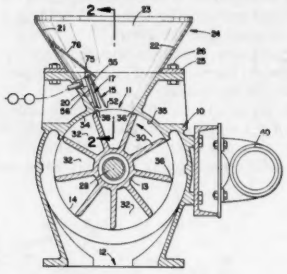
Int. Cl.[3] **B65G** *53/40*

U.S. Cl. 414—219 **17 Claims**

1. A method of preventing particles of material being handled by a rotary vane air lock, having an inlet opening and a discharge opening and vane ends sealingly engaging with leading and trailing lands on the air lock housing, from coming between the vane ends and the lands as the vanes rotate, com-

prising the steps of: covering the said end of each vane for a portion of its arc of movement across said inlet opening just before the vane end comes into contact with the leading land; and, in such movement portion of the vane end just before it contacts the leading land, exerting a removing force on any particles which may be clinging to the vane end.

6. In a rotary vane air lock for delivering granular material to a chamber under pressure, the air lock being comprised of: a housing having an inlet opening and a discharge opening, a vaned rotor rotatable in the housing, and the housing having a



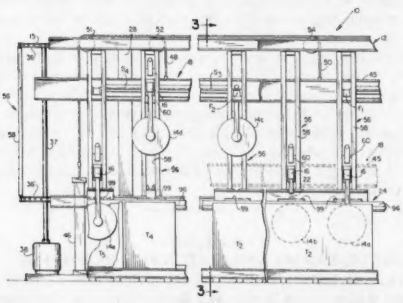
leading and a trailing land surface on the leading and trailing sides of the inlet opening adapted to be in sealing relationship with the ends of the vanes as the vane rotor rotates, the improvement which comprises: first means spaced from the leading land in a direction opposite to the direction of rotation of the rotor and located just before the leading land for preventing impingement of particulate material on the vane ends; and second means for exerting a removing force on any particles which might cling to the vane ends after the said vane ends pass the first mentioned means but before they engage the leading land.

4,268,206

ARTICLE TREATING MACHINE

Charles M. Johnson, Terryville, Conn., assignor to Napco, Inc., Terryville, Conn.

Filed Aug. 30, 1979, Ser. No. 71,109
Int. Cl.[3] B65H *49/02, 15/00*
U.S. Cl. 414—222 **13 Claims**



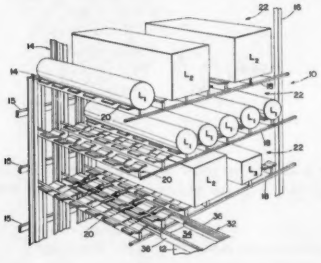
1. In an article treating machine having a series of article treating tanks defining a succession of article treating stations therein, and an elevator-conveyor system including a plurality of arms for carrying articles to be treated, guide rails supporting the arms in general horizontal cantilever position for vertical reciprocal movement between raised and lowered positions, an elevator mechanism for raising and lowering the arms associated with at least some of the treating stations to move articles carried thereby into and out of the tanks defining the latter treating stations, a conveyor operable to intermittently advance the guide rails and the arms carried thereby along an endless path having at least one rectilinear segment to convey the articles to be treated to the various treating stations, a plurality of barrels, bracket means for supporting each of the barrels on an associated one of the arms for rotation about a generally horizontal axis, a plurality of pinions equal in number to the barrels, means drivingly connecting each pinion to an associated one of the barrels, and rack means supported for rectilinear reciprocating movement along a path parallel to said rectilinear segment for engaging said pinions of associated barrels when said associated barrels are in said lowered positions, the improvement comprising oscillating means for reciprocating said rack means including a drive motor having a stationary part and a movable part operably connected to said rack means to move said rack means with a reciprocating stroke and to rotate the pinions engaged with said rack means whereby to axially oscillate said associated barrels and means for controlling said drive motor to gradually accelerate said rack means at the beginning of each stroke and gradually decelerating said rack means at the end of each stroke.

4,268,207

LOAD SUPPORT AND SHUTTLE

George R. Pipes, Salt Lake City, Utah, assignor to Eaton Corporation, Cleveland, Ohio

Filed Jul. 6, 1979, Ser. No. 55,260
Int. Cl.[3] B65G *1/127*
U.S. Cl. 414—277 **12 Claims**



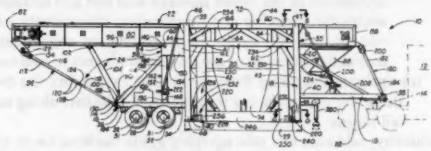
1. In a material handling system including a rack structure having a plurality of material storage bays opening into an aisle, load handling means movable horizontally and vertically in said aisle and including load handling shuttle means selectively movable into and out of said bays to transfer loads between said bays and said load handling means; at least one elongated load storage assembly fixed within a storage bay with its longitudinal axis perpendicular to said aisle, said load storage assembly including a plurality of first load supporting members spaced apart along said longitudinal axis; and load handling means mounted on said shuttle means, said load handling means including a plurality of second load supporting members spaced apart along a horizontal axis parallel to the longitudinal axis of said load storage assembly and alignable with the spaces between said first load supporting members; the improvement wherein one of said load storage assembly or load handling means comprises a beam member, and a plurality of load supporting plate members angled upwardly and outwardly from said beam member and having their outer ends bent downwardly to a substantially horizontal position to define opposed substantially horizontally oriented load supporting elements; vertical movement of said load handling means being effective to transfer loads between said load storage assembly and said load handling means as said second load supporting members pass through said spaces.

4,268,208

PORTABLE SELF-ERECTING SILO APPARATUS

Ronald G. Hankins, and Jimmie J. Butcher, both of Yukon, Okla., assignors to CMI Corporation, Oklahoma City, Okla.

Filed Dec. 13, 1979, Ser. No. 103,384
Int. Cl.³ B65G *65/32*
U.S. Cl. 414—332 **29 Claims**



1. A portable, self erecting silo apparatus for temporarily storing and dispensing asphaltic mix, the apparatus comprising:

a chassis having a first end portion and an opposed second end portion, the first end portion being spaced a distance from the opposed second end portion;

a support frame disposed between the first end portion and the opposed second end portion of the chassis, the support frame having a laterally extending upper frame, the support frame defining a passageway between the first end portion and the second end portion of the chassis for passage therethrough of a vehicle;

a container having an upper end portion and a lower end portion, the container being movable from a first position wherein the container is telescopically received in the support frame to a raised second position wherein the container is disposed generally above the passageway defined by the support frame;

a conveyor having an inlet end portion, a medial portion, and an opposed outlet end portion; and

pivot means for pivotally connecting the inlet end portion of the conveyor to one of the first and opposed second end portions of the chassis, the pivot means permitting movement of the conveyor between a stored position, an intermediate position and an operative position, in the stored position the container is maintained in the first position and the conveyor is positioned on the support frame such that the medial portion of the conveyor is supported by the support frame, in the intermediate position the container is substantially maintained in the first position, the inlet end portion of the conveyor is adjacent a support surface for the apparatus, and the outlet end portion of the conveyor is in a first raised position with relation to the support frame, in the operative position the container is maintained in the raised second position and the outlet end portion of the conveyor is maintained in a second raised position such that the outlet end portion of the conveyor is substantially centrally disposed above the upper end portion of the container.

4,268,209

VEHICLE CARRIER FOR COLLAPSIBLE VEHICLE

William J. Westerman, 2625 W. 4th St., Waterloo, Iowa 50701

Continuation of Ser. No. 906,331, May 16, 1978, abandoned, which is a division of Ser. No. 714,339, Aug. 16, 1976, Pat. No. 4,089,542. This application Jun. 12, 1979, Ser. No. 47,865
Int. Cl.³ B60P *3/06*; B60R *9/06*
U.S. Cl. 414—462 **6 Claims**

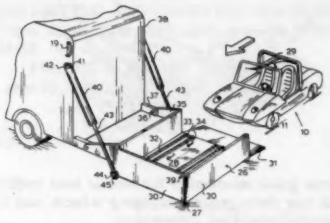
1. A vehicle carrier for a second vehicle comprising in combination:

a first vehicle having a plurality of wheels and a body defining an interior and an exterior of said vehicle;

a container having a bottom and plurality of sides at least one said side being movably attached to the bottom to swing down;

a second wheeled vehicle having a chassis and being of predetermined design for collapsing to fit substantially in said container and to be attached to said container when collapsed therein, said second wheel having means to lower said chassis in relation to said wheels for collapsing said vehicle;

movable attaching means hinging said container to said first vehicle, said attaching means being operatively connected to the body exterior of said vehicle and to said container to allow said vehicle to swing thereon;



lifting means attached between said vehicle and said attaching means to swing said container from a generally horizontal loading position to a generally vertical storage position adjacent said vehicle exterior; and

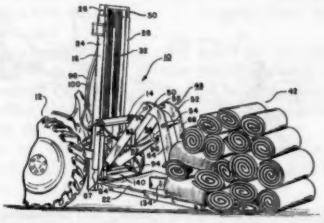
latching means for latching said second vehicle of predetermined design to said container to hold said second vehicle in position during storage thereof in said container adjacent said first vehicle exterior.

4,268,210

PALLET UNLOADER FOR FORK LIFTS

Charles O. Ferguson, and John W. Ferguson, both of South Bend, Ind., assignors to Ferguson Welding and Spring Fabrication, Inc., South Bend, Ind.

Filed Mar. 19, 1979, Ser. No. 21,923
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—497 **7 Claims**



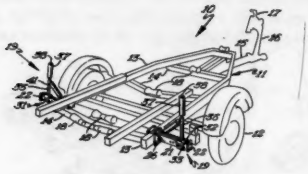
1. An unloading mechanism for a fork lift having a carriage, comprising a push plate slidable over a pallet on the fork lift, two arms, each consisting of a first arm section and a second arm section pivotally connected to each other, the first of said arm sections being pivotally connected to the frame of the carriage, a pivot means disposed on a horizontal axis and connecting said second arm to said push plate, a power means for moving said first and second arm sections apart, pivoting them relative to each other at their connection point for sliding said push plate across the pallet, and guide members mounted on the back of said push plate and disposed inwardly from the ends thereof for engaging the pallet to maintain said push plate in a substantially vertical position as it moves across the pallet.

4,268,211

GUIDE DEVICE FOR BOAT TRAILERS

Donald D. Schwebke, P.O. Box 302, Hampton, Iowa 50441

Filed Jun. 18, 1979, Ser. No. 49,308
Int. Cl.³ B60P *3/10*
U.S. Cl. 414—535 **6 Claims**



1. A boat guide mechanism for mobile boat trailers having front and rear ends, ground engaging wheels, and longitudinally extending members, comprising:

a pair of guide devices each including an elongate support member, each support member having means on one end thereof releasably engaging a longitudinally extending frame member of a boat trailer adjacent the rear end thereof to orient the support member in horizontally, laterally extending relation,

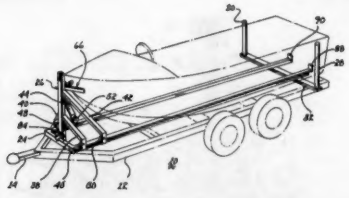
each guide device comprising a roller assembly including mounting means secured to said support member and being longitudinally adjustable relative thereto, a vertically disposed roller mounted on said mounting means and being vertically adjustable relative thereto, an elongate, oblique roller having one end thereof secured to said mounting means and having the other end thereof connected with said support member, said oblique roller having a rotational axis disposed in inclined relation relative to said support member and being shiftable with said mounting means in a direction longitudinally of the support member.

4,268,212

BOAT CART FOR TRAILERS

Robert D. Weary, 520 E. Carter Dr., Tempe, Ariz. 85282

Filed May 14, 1979, Ser. No. 38,531
Int. Cl.³ B60P *3/10*
U.S. Cl. 414—539 **8 Claims**



1. Apparatus for aiding the loading and unloading of a boat upon and off of supports on a boat trailer, said apparatus comprising in combination:

(a) rail means secured to the boat trailer and extending in general longitudinal alignment therewith;

(b) a cart translatable along said rail means for engaging and capturing the bow of the boat which bow includes a forwardly extending eyelet, said cart including:

i. roller means for supporting and maintaining said cart upon said rail means during translation of said cart,

ii. means for precluding lateral and vertical movement of said cart relative to said rail means,

iii. upwardly extending stanchion means for interconnecting the bow of the boat, with said cart,

iv. lock means for retaining the bow of the boat in engagement with said stanchion means, said lock means including a vertically oriented slot extending downwardly in said stanchion means for penetrably receiving the eyelet at the bow of the boat a lock member having at least one leg dimensioned to penetrably engage the eyelet upon insertion of the eyelet through said slot, said lock member being pivotally secured to said stanchion and pivotally responsive to vertical downward and upward movement of the eyelet through said slot and including means for engaging and disengaging, respectively, said one leg with the eyelet and preclude, on engagement, fore and aft motion of the boat with respect to said cart;

(c) uprights extending from the trailer for guiding the boat along the trailer during translation of said cart along said rail means;

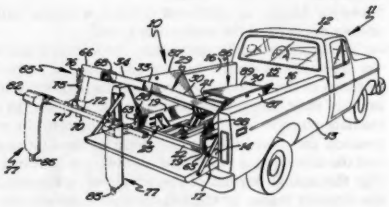
whereby, said cart and said uprights guide the boat on to and off of the trailer and the supports thereof during loading and unloading of the boat.

4,268,213

VEHICLE HOIST AND TOWING DEVICE

Scott M. Obbink, Armstrong, Iowa, assignor to Obbink Industries, Inc., Armstrong, Iowa

Filed Apr. 11, 1979, Ser. No. 28,980
Int. Cl.³ B60P *3/00*
U.S. Cl. 414—563 **8 Claims**



1. A vehicle hoist and towing device for a truck having a bed comprising:

a mounting frame mounted on the truck bed,

an elongate, track means fixedly secured to said mounting frame and extending longitudinally thereof, and located generally centrally of the truck bed;

a hoist frame pivotally secured to said mounting frame for vertical swinging movement relative to the mounting frame between lowered and elevated positions,

an elongate hoist boom slidably mounted on said hoist frame for longitudinal movement relative thereto between a retracted position and extended position, said boom being positioned generally centrally of the truck bed, said boom when in said retracted position being disposed within the confines of said mounting frame, and when in said extended position projecting longitudinally from the rear of the mounting frame and associated truck,

linkage means interconnected with said boom and engaging said track means,

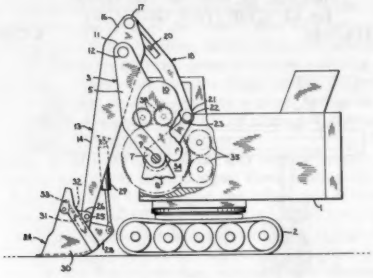
a reversible hydraulic cylinder and piston unit connected with said mounting frame and to said linkage means, said hydraulic cylinder and piston unit when shifting said boom from said fully retracted position in an extension direction, to move said boom rectilinearly throughout the major portion of its extension stroke and thereafter causing said hoist frame to swing from a lowered to an elevated position to elevate the boom.

4,268,214

EXCAVATOR FRONT END

Maurice I. Zeldman, Pittsburgh, Pa., assignor to Bucyrus-Erie Company, South Milwaukee, Wis.

Filed Mar. 26, 1979, Ser. No. 23,694
Int. Cl.[3] E02F *3/42*
U.S. Cl. 414—694 **29 Claims**



1. In a front end mechanism for excavators and the like, the combination comprising:

a. a boom member pivotally mounted at its foot;

b. a dipper stick pivoted to said boom that extends from the boom;

c. a moment arm forming a part of said dipper stick that presents a turning radius extending from the pivoted connection of the dipper stick and boom;

d. a rotatable hoist member having a pivoted mounting and extending radially from its pivot to present a radius arm;

e. a coupling member cooperatively engaged between said moment arm and said hoist member radius arm at a position outwardly of its pivoted mounting;

f. said boom member, moment arm, hoist member, and coupling member forming a pivoted four element motion control assembly supporting said dipper stick;

g. a crowd drive positioned between elements of said motion control assembly and operable to develop relative movement between said boom and the other assembly elements to crowd said dipper stick; and

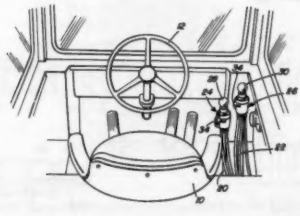
h. a hoist drive in driving relation to said hoist member to rotate said hoist member about its pivoted mounting and pivot said boom about said boom foot.

4,268,215

AIR SHIFTING DEVICE

Martin J. Spicer, 430 Union St., and Howard G. Spicer, 392 E. Bluff St., both of Marseilles, Ill. 61341

Filed Feb. 6, 1979, Ser. No. 9,959
Int. Cl.[3] E02F *3/85*
U.S. Cl. 414—715 **11 Claims**



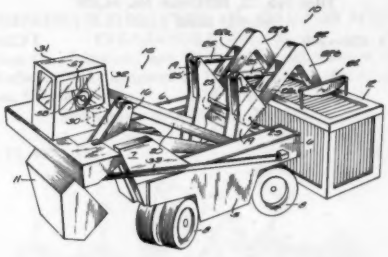
1. In a vehicle utilizing a power shift transmission and including first and second auxiliary function control levers, the combination of: a first control means mounted on said first lever and connected to said transmission for causing said transmission to shift between gears, said first control means and said first lever being individually actuatable; and second control means mounted on said second lever for causing said transmission to shift between a forward and a reverse mode of operation, said second control means and said second lever being individually actuatable.

4,268,216

LOAD LIFTING AND CARRYING MACHINE

Fernand Copie, RayGo, Inc., 9401 85th Ave. N., Minneapolis, Minn. 55445

Filed Jul. 3, 1978, Ser. No. 921,762
Claims priority, application United Kingdom, Jul. 4, 1977, 27963/77
Int. Cl.[3] B66C *23/72*
U.S. Cl. 414—719 **7 Claims**



1. A load lifting and transporting machine comprising:

A. a movably mounted base;

B. load engaging means;

C. load counterbalancing means;

D. structure by which the load engaging means is mounted on the base for elevation and descent and for projection and retraction thereof with respect to the base, said structure comprising

(1) a boom having inner and outer ends,

(2) pivot means connecting the inner end of the boom with the base, the axis of said pivot means being fixed with respect to the base and being horizontal so that the boom is constrained to up and down swinging motion with its outer free end traveling in an arcuate path,

(3) a rigid arm having the load engaging means attached thereto, and

(4) means connecting said rigid arm with the outer free end of the boom in a manner accommodating relative movement therebetween with the load engaging means traveling towards or from said horizontal axis about which the boom swings;

E. means by which the load counterbalancing means is mounted on the base for projection and retraction thereof relative to the base;

F. a connecting rod capable of transmitting force in either direction along a path parallel with its longitudinal dimension;

G. means joining one end of the connecting rod with said means by which the load counterbalancing means is mounted on the base and its other end with said rigid arm, so that the boom, the connecting rod, and portions of said rigid arm and of said means by which the load counterbalancing means is mounted on the base, form elements of a linkage assembly of alternate geometry that connects the load engaging means with the load counterbalancing means, and by such connection constrains the same to concomitant projection or retraction with respect to the base, and by alteration of its geometry effects such concomitant projection or retraction, regardless of the position of elevation of the boom, whereby tilting movements

respectively produced by a load on the load engaging means and by the load counterbalancing means at all times oppose one another; and

H. controllable power means operable

(1) to raise the boom and control its descent, and

(2) to alter the geometry of the linkage assembly, so that by controlled operation of said power means the machine can be caused to lift or lower a load, place a load on its base or lift a load off its base without significantly shifting the location of the center of gravity of the machine.

4,268,217

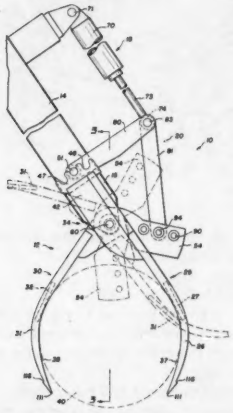
LOAD CARRYING APPARATUS

Arthur W. Perreault, 1125 Thomas Ave., Coquitlam, British Columbia, Canada (V3K 2L1), and Leo H. Dupre, 305 Cutler, Coquitlam, British Columbia, Canada (V3K 5C1)

Filed Feb. 23, 1979, Ser. No. 14,504

Int. Cl.³ B66C *1/22*

U.S. Cl. 414—740 **3 Claims**



1. Load carrying apparatus comprising an articulated boom having a outer end, a fluid operated ram pivotally secured at one end to the boom and having an opposite end adjacent the outer end, a grapple assembly including a fixed frame and a swingable frame, mounting means securing the grapple assembly to the outer end and permitting the swingable frame to swing about a transverse axis normal to a longitudinal axis of the boom, said mounting means including a transverse shaft removably supported in a bore formed in the outer end, said transverse shaft having opposite ends projecting laterally of side edges of the boom, said opposite ends providing journals for the swingable frame, said fixed and swingable frames each having side members providing crank portions near the outer end and opposed load-gripping portions projecting beyond said outer end, said load-gripping portions of the fixed and swingable frames being curved towards one another and transversely spaced apart whereby to cross when in fully closed position, holding means securing the crank portions of the fixed frame against movement relative to the boom, said holding means including a quadrant on each crank portion of the fixed frame, said quadrants each having spaced notches extending into an edge thereof, a stop member secured to the boom for entering into a selected notch of each quadrant, said crank portions of the swingable frame having spaced openings located at progressively increasing distances from the holding means, and linkage means pivotally connecting the crank portions of the swingable frame to the opposite end of the ram and to the boom whereby operation of said ram will move the grapple assembly between open and closed positions, said linkage means including a pair of links and a pivot pin carried thereby for entry through selected ones of said spaced openings in the crank portions of the swingable frame.

4,268,218

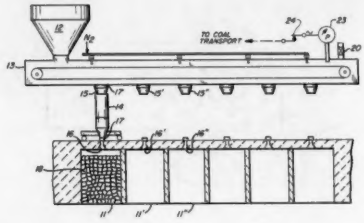
PREVENTING THE OVERCHARGING OF COKE OVENS

Charles A. Price, Portage, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 22, 1979, Ser. No. 13,953

Int. Cl.³ C10B *31/04*; G01F *23/14*

U.S. Cl. 414—786 **6 Claims**



1. In the charging of coke ovens with coal from a coal storage container, wherein the coal is transported from the container by a conveyor system overlying a coal inlet, said inlet communicating with an opening in the roof of the coke oven; said storage container, said conveyor, said inlet and said oven being interconnected to form a substantially enclosed system pressurized with a non-deleterious gas, said coke oven having a standpipe for the removal of coal coking gases, the lower extremity of said standpipe being located in the upper portion of the oven,

the improvement for preventing the overcharging of said oven which comprises, during at least the latter portion of the charging period monitoring a variable which is a function of the pressure in said enclosed system, determining when said variable shows an increase substantially greater than the normal variation thereof encountered during charging, generating a signal in response to such substantial variable increase and stopping the charging of coke in response to said signal.

4,268,219

GREEN TIRE CONVEYING METHOD AND APPARATUS

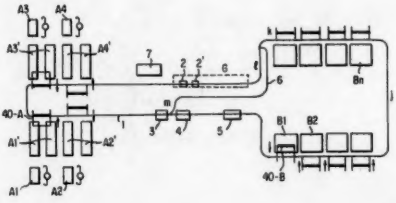
Kazuhiko Nakagawa, Kobe; Yasuhiko Fujieda, Akashi; Shozo Hara, Kobe; Toshikazu Tanaka, Kobe, and Akira Taira, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation-in-part of Ser. No. 678,755, Apr. 21, 1976, abandoned. This application Nov. 2, 1978, Ser. No. 956,977

Claims priority, application Japan, Apr. 21, 1975, 50-48992; Apr. 25, 1975, 50-51157

Int. Cl.³ B65H *1/00*

U.S. Cl. 414—786 **6 Claims**



1. A conveying method for withdrawing green tires from storing devices for storing green tires, disposed near building machines, conveying them to curing machines while held on

conveying apparatus, and loading them onto the curing machines, comprising the steps of:

sending a first green tire delivery demand signal from a particular curing machine of a plurality of curing machines, to a control system which stores the relationships between each of the curing machines and the corresponding respective storing devices, and the quantities and kinds of green tires stored in the storing devices, each curing machine having a timing means set for that particular machine which sends the demand signal to the control system in advance of the curing time of a green tire is completed in the machine, taking into consideration the time it takes to deliver a green tire from a storing device through various intermediate stages and to the machine, whereby the machine receives a green tire to be cured immediately upon completion of curing of a preceeding tire and without a waiting time;

sending a second signal from the control system which receives said first demand signal for indicating the curing machine which has emitted the green tire delivery demand signal and the corresponding storing device, to an automatic truck supporting and carrying thereon a mechanism having the function of withdrawing a green tire from one of the storing devices, suspending it thereon, and carrying and loading it onto one of the curing machines, said automatic truck having control means responsive to said second signal for operating the automatic truck, and said automatic truck running on rails laid and supported at a suitable height above said storing devices and said curing machines; and

on receipt of said second signal, moving said automatic truck to said corresponding storing device for picking up a green tire therefrom;

automatically operating conveying means at each storing device to deliver a green tire from the storing device to the truck in response to arrival of an automatic truck at the storing device to pick up a green tire from the storing device; and

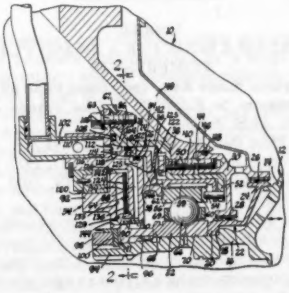
suspending the green tire on the automatic truck, moving said automatic truck to said particular curing machine, and loading the green tire onto the particular curing machine.

4,268,220

THRUST BALANCING

Richard C. Malott, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1979, Ser. No. 17,608
Int. Cl.³ F01D *3/04*
U.S. Cl. 415—104 **2 Claims**



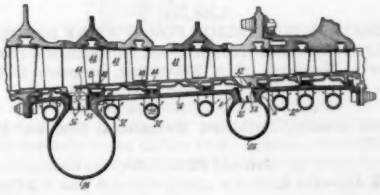
1. A rotor thrust compensating assembly for association with a gas turbine engine comprising: a rotor axially movable in response to variable gas loads on a rotor element of a gas turbine engine, a thrust bearing having inner and outer races with anti-friction means therebetween, one of said races being fixed to said rotor for both axial and rotary movement therewith, bearing support means for the other of said races, variable axial load integrating means including a pair of relatively rotating pistons having a cavity therebetween, oil supply means for directing oil into said load integrating means in accordance with rotor thrust loads acting on the said one of said races, means on one of said relatively rotating pistons to define a plurality of separate circumferentially spaced pockets thereon, the other of said pair of relatively rotating pistons having an inboard surface, a cover on said one of said pistons with an open end thereon for directing oil from said oil supply means into each of said pockets, said cover having pores therethrough rotated with respect to said inboard surface for distributing liquid from said pockets to uniformly fill said cavity between said surface and said cover for producing a uniformly distributed resultant dynamic hydraulic force on said rotor to compensate variable gas loadings thereon.

4,268,221

COMPRESSOR STRUCTURE ADAPTED FOR ACTIVE CLEARANCE CONTROL

William G. Monsarrat, and William F. Neal, both of South Windsor, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,636
Int. Cl.³ F02C *7/16*
U.S. Cl. 415—116 **3 Claims**



1. In an axial flow gas turbine engine of the type having rotor and stator elements and wherein the stator element includes a longitudinally split compressor case, the improvement comprising:

a compressor case having an integrally formed manifold of circular cross section extending circumferentially about the exterior of the case and across the longitudinal split in the case and having a plurality of circumferentially spaced ports extending into the manifold from the interior of the case;

a liner extending through each of said ports for shielding the case from medium gases flowing into the manifold; and

means for thermally controlling the diameter of the case including apparatus capable of discharging cooling air against the case beneath the circular cross section manifold.

4,268,222

EQUIPMENT FOR FOLDING THE BLADES OF A MAIN HELICOPTER ROTOR

Louis A. Bernard, Saint-Victoret, France, assignor to Societe Nationale Industrielle Aerospatiale, France

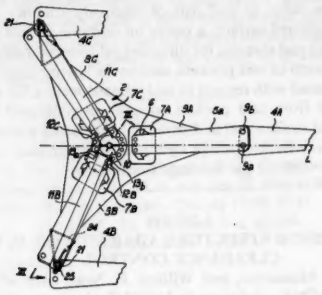
Filed Apr. 12, 1979, Ser. No. 29,510
Claims priority, application France, Apr. 17, 1978, 78 11177
Int. Cl.³ B64C *11/28*
U.S. Cl. 416—1 **15 Claims**

1. Equipment for folding the blades of a main helicopter rotor, in particular of the type having a star-shaped hub with a rigid central part and provided with arms which are flattened in the plane of the star and flexible perpendicularly to this plane, a blade root being joined to the end of each arm of said hub by means of members having at least one link shaft which

is substantially perpendicular to the plane of the star, said equipment essentially comprising

a housing adapted to be fitted over said rigid central part of said hub,

and rigid elongate supports linked by one end to said housing,



and a folding shaft linking the other end of each of said elongate supports to one of said blade roots with the number of supports at most equal in number to the number of blades of the helicopter rotor.

4,268,223

VIBRATION SUPRESSION FOR TURBINE BLADES

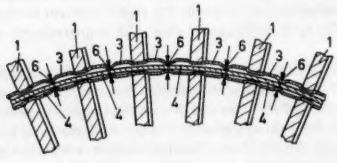
Emil Anner, Neuenhof; Harry Brunner, Fislisbach, and Hans J. Meister, Wettingen, all of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Sep. 14, 1978, Ser. No. 942,143

Claims priority, application Switzerland, Sep. 14, 1977, 11220/77

Int. Cl.³ F01D *5/24*

U.S. Cl. 416—196 R **3 Claims**



1. In a turbine or compressor of the type having stator and rotor members formed with adjacent radial blades arranged in a row about a central axis of the turbine or compressor, a vibration suppressed blade arrangement comprising:

a damping tube including a plurality of curved damping tube segments which extend through a plurality of blades arranged in a blade ring;

at least two adjacent blades having apertures therein, the damping tube extending through and being both closely and directly received by said apertures and having a thickness adjacent said apertures that is greater than the size of said apertures to securely position the damping tube with respect to said blades, each of the damping tube segments including enlarged end portions which are provided in close proximity to a respective one of the apertures of one of the blades, said enlarged end portions being wider than the size of the respective one of the apertures to securely position the tube segment with respect to the one blade; and

a wire extending through the damping tube, the wire including a plurality of wire segments, each wire segment extending through a corresponding one of said curved damping tube segments along a longitudinal axis of the damping tube, the wire being secured to the damping tube intermediate adjacent blades of the blade ring.

4,268,224

METHOD OF AND MEANS FOR CONVEYING AND MEASURING GASES FOR GAS ANALYSIS OPERATIONS

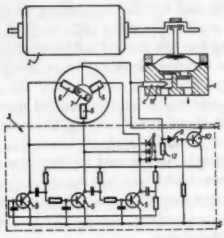
Wolfram Breuer, and Klaus Siemer, both of Leverkusen, Fed. Rep. of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 836,008, Jun. 24, 1969, abandoned, which is a continuation of Ser. No. 251,846, May 5, 1972, abandoned. This application Jul. 23, 1976, Ser. No. 708,154

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1969, 1973796

Int. Cl.³ F04B *49/06;* H02P *5/28*

U.S. Cl. 417—32 **2 Claims**



1. In gas analysis apparatus, wherein a gas stream is delivered to gas analysis means via a pump having a constant volume throughput per working cycle and an electric motor for driving the pump and having a controllable speed of rotation upon which the frequency of the pump is dependent, the improvement comprising:

(a) measuring means for measuring the pump inlet temperature of said gas stream and

(b) a frequency transmitter responsive to the measuring means to vary the frequency thereof as a function of said temperature, and for controlling the speed of rotation of said electric motor to vary same in response to changes in said temperature and thereby varying the volume delivered by said pump per unit time to compensate for changes in said temperature whereby a constant mass flow per unit time is delivered by the pump to the gas analysis means.

4,268,225

STRUCTURE OF A SHOE FOR A SWASH PLATE TYPE COMPRESSOR

Shozo Nakayama; Kimio Kato, and Tomoo Fujii, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Dec. 20, 1978, Ser. No. 971,210

Claims priority, application Japan, Dec. 27, 1977, 52/159736

Int. Cl.³ F04B *1/14;* F16C *27/04, 7/00*

U.S. Cl. 417—269 **10 Claims**

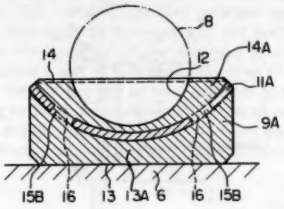
1. A round disc-shaped shoe having a given axial thickness, for use in a swash plate type compressor for transmitting an axial force from a rotating swash plate of the compressor to a piston of the compressor which applies an axially reciprocating compression force to a refrigerant within a cylinder bore of the compressor, comprising:

a first main portion made of a tetrafluoroethylene resin material, and having an initially flat round surface for contacting said swash plate;

a second main portion made of a tetrafluoroethylene resin, and formed with a concave recess in an exposed surface

thereof for receiving a ball bearing operatively connected to said piston; and

a bowl-shaped reinforcing member made of a metallic material, and embedded between said first and second main portions, said reinforcing member being axially positioned close to said concave recess of said second main portion and far from said flat round surface of said first main



portion, said reinforcing member surrounding said recess and curving away from said initially flat round surface, thereby restricting thermal expansion of only the central part of said first main portion of said shoe, so that thermal expansion causes said initially flat round surface to assume an arcuate shape curving in the same direction as said reinforcing member.

4,268,226

TUBE TYPE PUMP AND WAVE MOTOR

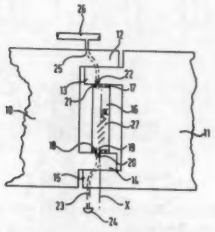
Ralph F. Morris, Fenny Drayton near Nuneaton, England, assignor to Dunlop Limited, London, England

Filed Jul. 26, 1978, Ser. No. 928,190

Claims priority, application United Kingdom, Aug. 6, 1977, 33061/77

Int. Cl.³ F04B *17/00, 43/08*

U.S. Cl. 417—332 **5 Claims**



1. A wave energy conversion apparatus comprising:

a pair of members interconnected by a hinge adapted to undergo relative angular movement under the influence of waves in a body of water; and,

a pump comprising a length of hose, end closures for said hose, means connecting opposite ends of said hose to said end closures in a fluid tight manner, fluid inlet and outlet means communicating with the hose interior, and non-return valves respectively provided in said fluid inlet and outlet, said hose being reinforced by a substantially inextensible reinforcement wound helically about said hose and arranged so that when said end closures are relatively angularly moved fluid within said hose is subject to a constricting action by said reinforcement, said end closures being connected to said pair of pivoted members with said end closures being substantially coaxial with said hinge members such that said hose is twisted and untwisted in response to relative angular movement of said members to vary the internal volume of said hose, said hose drawing fluid through said inlet and associated non-return valve when untwisting and expelling water through said outlet and associated non-return valve when twisting.

4,268,227

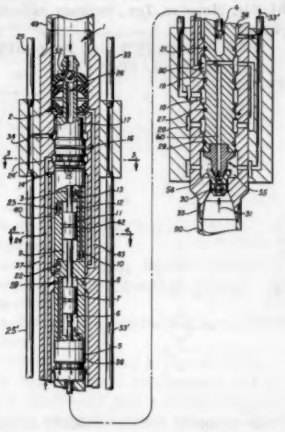
DOWNHOLE, HYDRAULICALLY-ACTUATED PUMP AND CAVITY HAVING CLOSED POWER FLUID FLOW

George K. Roeder, P.O. Box 4335, Odessa, Tex. 79760

Filed Jun. 11, 1979, Ser. No. 47,127

Int. Cl.³ F04B *47/10*

U.S. Cl. 417—358 **12 Claims**



1. A free-type, hydraulically-actuated pump assembly for use downhole in a wellbore for pumping fluid from the bottom of the borehole to the surface of the ground, comprising:

an elongated cavity located downhole in the borehole within which said free-type pump assembly is received therewithin; said cavity having an upper terminal end by which it can be connected to the lower end of a tubing string; a shoe at the bottom of the cavity;

a lower seat means formed at the lower extremity of the pump assembly by which the pump assembly is seated against said shoe, and by which formation fluid flows along an isolated flow path and into the lower intake end of the pump assembly;

a packer nose assembly at the upper extremity of the pump by which power fluid can be directed along an isolated flow path and into the upper inlet end of the pump assembly;

said pump assembly includes an engine end having a piston and a valve means, said valve means having an inlet and a spent power oil outlet; and, a production end having a double acting piston therein, a formation fluid intake, and a produced fluid outlet;

a hollow connecting rod interconnecting the piston of the engine and the piston of the production end;

means by which power oil is transferred directly from said packer nose assembly into one end of said hollow rod; said valve means being connected to receive power oil from the interior of said hollow rod, and to deliver power oil to either side of the piston of the engine;

said cavity being of a size to admit the free-type pump assembly to be circulated from the surface of the ground, downhole through the tubing string, and into seated relationship respective to the shoe;

a spent power fluid flow conduit connected to said spent power oil outlet of said valve means by which spent power fluid is returned to the surface;

a produced fluid flow conduit connected to said produced fluid outlet of said production end by which produced

fluid is forced from the pump assembly uphole to the surface of the ground;

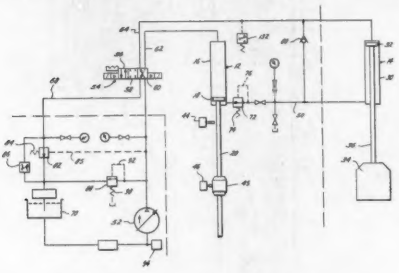
whereby power fluid flows along a closed circuit from the ground, downhole to the pump assembly to thereby actuate the engine end, while spent power fluid flows along one fluid conduit back uphole to the surface of the ground; and, produced fluid flows along another fluid conduit back uphole to the surface of the ground.

4,268,228

HYDRAULIC PUMPING UNIT

Fount E. McKee, Houston, Tex., assignor to Delta-X Corporation, Houston, Tex.

Filed Aug. 13, 1979, Ser. No. 65,813
Int. Cl.³ F04B 9/10
U.S. Cl. 417—390 **6 Claims**



1. A hydraulic pumping unit for vertically actuating a downhole pump comprising,

a first vertically positioned hydraulic piston and cylinder assembly, said piston having a piston rod adapted to be connected to said pump for actuating said pump,

a second vertically positioned hydraulic piston and cylinder assembly, said second piston having a piston rod,

a vertically movable weight connected to the piston rod of the second piston,

a first hydraulic line connected between the first and second cylinders at a position below said first and second pistons whereby downwardly movement of one piston causes upward movement of the other piston,

a hydraulic pump,

switching means connected between hydraulic pump and said first and second cylinders for alternately supplying hydraulic fluid to and from said first and second cylinders above said pistons whereby downward movement of the first piston stores energy in the second assembly for assisting in moving the first piston upwardly, and

a valve connected between said first cylinder and said first hydraulic line which is normally closed but actuated to an open position by the pressure in the first hydraulic line whereby a failure in the first line will not allow free fall of the first piston.

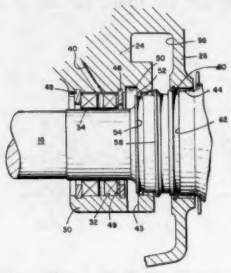
4,268,229

TURBOCHARGER SHAFT SEAL ARRANGEMENT

Paul H. Berg, Van Nuys, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 19, 1979, Ser. No. 31,685
Int. Cl.³ F16J 15/42
U.S. Cl. 417—407 **19 Claims**

11. In a turbocharger having a center housing with a bearing boss defining a bearing bore receiving bearing means rotatably supporting a turbocharger shaft, a sump for collecting for recirculation lubricant supplied to the bearing means, and a turbine wheel mounted on said shaft within a turbine housing, means for sealing passage of the shaft into the turbine housing through a shaft opening in a center housing side wall to prevent leakage of lubricant into the turbine housing, comprising a first seal ring mounted on the shaft within the bearing boss in a position spaced axially in an outboard direction from the bearing means; a first vent formed in said center housing within the bearing boss circumferentially about the shaft and axially between said first seal ring and the bearing means, and in open



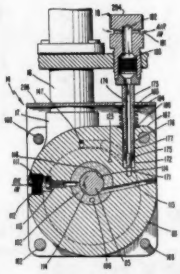
communication with the sump; a second seal ring mounted on the shaft within the side wall shaft opening; and a second vent formed in said center housing circumferentially about the shaft and axially between said first and second seal rings, and in open communication with the sump.

4,268,230

GAS BALLAST FOR OIL SEALED MECHANICAL VACUUM VANE PUMP

Benjamin Bassan, Framingham, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 26, 1979, Ser. No. 33,628
Int. Cl.³ F04C 25/02, 27/02, 29/00
U.S. Cl. 418—15 **6 Claims**



1. A gas ballast device for an oil sealed mechanical rotary vane vacuum pump to prevent vapor condensation in the oulet port region of the low vacuum stage of the pump as a vane cyclically approaches the outlet port, whereby molecules of condensed vapor in the oil do not flow back to the inlet port of the low vacuum stage through the oil seal between the inlet and outlet ports, the gas ballast device providing a flow path for atmospheric air leading to the outlet port region, said flow path including means for enabling air to flow into the outlet port region through an orifice only during a small portion of each vane cycle immediately after each vane passes the orifice as the vane approaches the outlet port, the orifice being posi-

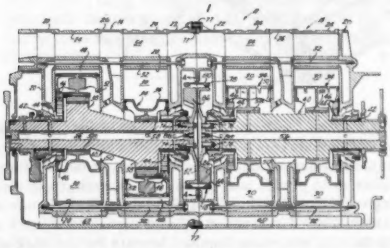
tioned near the outlet port region so that no direct flow path exists from the orifice to the inlet port of the atmospheric air flowing through the orifice, an air filter body including a passage leading to said air flow enabling means, said air filter body being normally inserted in and removable from a housing for the pump, said means for enabling air to flow being in an air flow structure located in the housing, said air flow structure including a plug attached to the end of the structure remote from the air filter body, said air flow structure being engaged by the air filter body so movement of the body drives the structure in the housing to cause said plug to be selectively engaged against a seat in the housing to close the flow path, and means for enabling the air flow structure to be moved in the housing so the plug moves in both directions relative to the seat while enabling removal of the air filter body from the housing without removal of the air flow structure from the housing.

4,268,231

MULTI-UNIT ROTARY PISTON MECHANISM AND MAINSHAFT COUPLING THEREFOR

Howard R. Corwin, Montclair, and Charles Jones, Hillsdale, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Apr. 4, 1979, Ser. No. 27,147
Int. Cl.³ F01C *11/00, 21/04;* F16D *3/18*
U.S. Cl. 418—60 **4 Claims**



1. A multi-unit, rotary mechanism wherein each unit consists of at least two rotors supported by a mainshaft in a housing cavity for planetary rotative movement relative to the housing cavity, the mechanism comprising

(a) counterweight means for separately, rotatively, dynamically balancing each mainshaft of each unit;

(b) a coupling means for interconnecting each mainshaft so as to permit radial and endwise axial flexibility relative to the mainshaft axes of the units and provide torsional stiffness for torque transmission between said connected mainshafts while eliminating transmission of dynamic bending moments; and

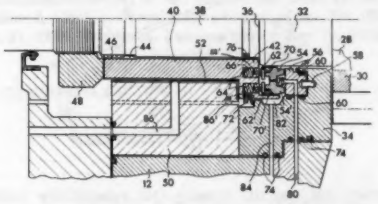
(c) said coupling means including diaphragm elements of diametral dimensions substantially larger than the diameter of the mainshafts and connected to the endfaces of the mainshafts of next adjacent units, the diaphragm elements of the adjacent units being secured at their respective peripheries to effect torque transmission from one to the other and to the endfaces of their respective mainshafts to provide a frictional force between said diaphragm element and its associated mainshaft sufficient to transfer full torque load between the mainshaft and diaphragm element.

4,268,232

INTERMESHING GEAR PUMP WITH SEALING MEANS COMPRISING TWO CONCENTRIC SLIDE RINGS

Fritz Haupt, Regensdorf, Switzerland, assignor to Maag Gearwheel & Machine Company Ltd., Zürich, Switzerland

Filed Mar. 19, 1979, Ser. No. 21,786
Claims priority, application Switzerland, Apr. 7, 1978, 3757/78
Int. Cl.³ F04C *2/18, 15/00;* F16J *15/40, 15/34*
U.S. Cl. 418—135 **9 Claims**



1. A gear pump for pumping highly viscous medium at high pressures comprising:

a housing providing a pump chamber therein;

two intermeshing, fluid-conveying gears arranged in said pump chamber;

a respective shaft upon which there is mounted a related one of said gears;

each said shaft being provided to one side of the related gear with shaft bearing means and between said shaft bearing means and the related gear a sliding ring sealing means adjoining the pump chamber;

said sliding ring sealing means comprising two essentially concentric slide rings arranged at least approximately in a common radial plane;

said two slide rings coacting with one another so as to form therebetween an intermediate space;

means for supplying a blocking fluid to said space;

a respective axially mounted bushing arranged in the shaft bearing means of the related shaft and secured to the shaft for conjoint rotation therein;

means for loading in axial direction each of the bushings with its related shaft into a rigid unit;

a counter ring fixedly retained against rotation within the housing;

both of said concentric slide rings being arranged between end surfaces of said bushing and said counter ring; and

spring means for loading said slide rings in axial direction against the force of the pumped fluid medium and the blocking fluid.

4,268,233

HAND HELD ROTARY MACHINE TOOL WITH VIBRATION INSULATING MEANS

Harry G. Fernström, Saltsjö-Boo, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed May 15, 1979, Ser. No. 39,294
Claims priority, application Sweden, May 16, 1978, 7805546
Int. Cl.³ F01C *13/02, 21/02*
U.S. Cl. 418—270 **11 Claims**

1. In a hand held machine for grinding and like operations, comprising:

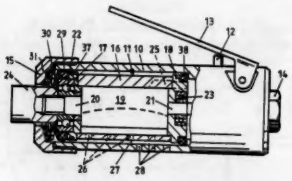
a housing (10); a motor (16–19) mounted in the housing (10) and rotating a tool carrying spindle (19–21, 24), said motor (16–19) including a rotor (19) and a stator (16); a forward bearing means (22, 29, 30) between the housing and the motor, and including a vibration insulating means (29) which is resilient to radial displacement of the spindle (19–21, 24); and a rear bearing means (23, 38) between the housing and the motor, and which is substantially non-resilient to radial spindle displacement,

the improvement wherein:

said tool carrying spindle is rigid and mainly formed by the rotor (19) of the motor (16–19);

said vibration insulating means (29) comprises at least one resilient element located between the housing (10) and the stator (16) of the motor (16–19); and

said forward bearing means (29, 30) includes an axial thrust bearing (30) arranged to transfer axial load between the



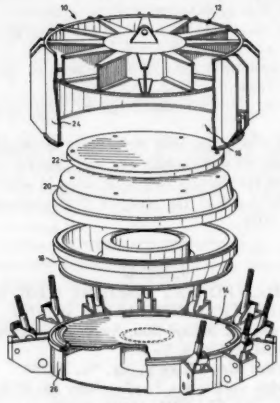
stator (16) and the housing (10) substantially without applying said axial load to said at least one resilient element and to permit a universal radial displacement of the forward end of the stator (16) relative to the housing (10) notwithstanding the magnitude of the axial load on the motor, said axial thrust bearing (30) comprising a ball bearing having balls (34) and ungrooved ball races (32, 33) so as to permit a universal displacement of the balls (34) relative to the ball races (32, 33).

4,268,234

TIRE CURING ASSEMBLY WITH IMPROVED SEAL

David L. Tsang, Cobourg, and Wlodzimierz I. Majewicz, Toronto, both of Canada, assignors to United Tire & Rubber Co. Limited, Rexdale, Canada

Filed May 6, 1980, Ser. No. 147,250
Int. Cl.[3] B29H *5/02*
U.S. Cl. 425—32 13 Claims



1. A tire curing press comprising,

(a) a tire curing chamber formed by housing members which comprise a base member and a cover member, said base and cover members having oppositely disposed sealing faces extending about a perimeter of said chamber,

(b) a seal member having an outer peripheral edge and an inner peripheral edge and a flexible body extending in a convex arc of curvature therebetween to define a pressure chamber inwardly thereof,

(c) seal retaining means comprising,

(i) a first retaining wall on one of said housing members and disposed outwardly from said outer peripheral edge for retaining said sealing member against displacement outwardly from said chamber,

(ii) a second retaining wall on the other of said housing members arranged to extend laterally across said flexible body of said sealing member when said cover is operably located on said base to form said chamber,

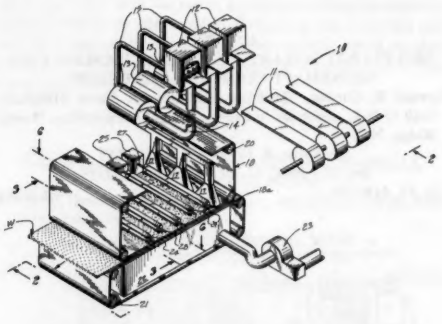
(d) passage means communicating between said pressure chamber and said tire curing chamber to permit the pressure which is generated within said curing chamber in use to generate pressure within said pressure chamber which urges said seal member into engagement with said first and second retaining walls, thereby to seal said curing chamber.

4,268,235

APPARATUS FOR THE MANUFACTURE OF FIBROUS WEBS

William C. Bean, Larsen, and Thomas M. Tao, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 21, 1979, Ser. No. 105,897
Int. Cl.[3] B29C *17/08*
U.S. Cl. 425—83.1 9 Claims



1. Apparatus for manufacturing fiber webs, comprising: delivery means for dry fibers; an endless screen including a planar section linearly movable beneath said delivery means and effective to permit passage of fibers therethrough onto a forming wire provided therebeneath, and also linearly movable in the direction of movement of said planar section of said screen; vacuum box means disposed beneath said forming wire; and a plurality of banks of elongate brushes in parallel array, each extending transversely of the direction of movement of said screen and said forming wire and operative to oscillate longitudinally, thereby to engage and uniformly distribute said fibers as they pass through said screen onto said forming wire.

4,268,236

DISTRIBUTION AND CALIBRATION SYSTEM FOR EXPANDED PLASTIC PANEL MANUFACTURE

Jean M. R. Peille, Esperaza, France, assignor to Societe Industrielle de Stratifies, Esperaza, France

Filed Jan. 14, 1980, Ser. No. 111,979
Claims priority, application France, Jan. 15, 1979, 79 00847
Int. Cl.[3] B29D *27/04*
U.S. Cl. 425—115 9 Claims

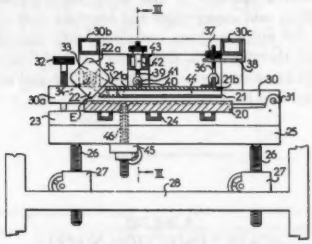
1. A distributing and calibrating system for liquid reactant mixture for continuous manufacturing installations of panels of expandable synthetic material, in which the expandable synthetic material is delivered by pouring in the liquid state upon a support sheet which may or may not be liquid-tight and which is in continuous movement, said material being preferably delivered by a pouring system comprising plural fixed pouring heads distributed along a line perpendicular to the direction of movement of the support sheet, the said installation further comprising means for applying to the top of the

synthetic material delivered by pouring a cover sheet which may or may not be liquid-tight, the support sheet and the cover sheet making it possible to subject the synthetic material to a calibrating action when this material is still present in the liquid state, said system comprising:

a reference plate below the plane of movement of the support sheet upon which said support sheet is displaced, and

a distribution plate above the plane of movement of the support sheet and of the cover sheet,

said distribution plate being elastically deformable and adjustable in spacing and inclination relative to the reference plate, and



said distribution plate being positioned immediately upstream from a calibrating bar which is adjustable in displacement relative to either one of said plates, whereby the material is subjected consecutively to the action of the distribution plate and of the calibrating bar,

the distribution plate comprising adjusting means for locally deforming said distribution plate along a line transverse to the direction of movement of the support and cover sheets of the panel being formed, in such manner that said local adjustable deformations of said plate equalize the local excess thicknesses attributable to the pouring lines of said pouring head.

4,268,237

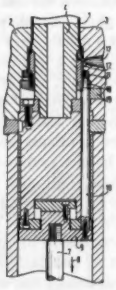
APPARATUS FOR MANUFACTURING A TUBULAR BODY PROVIDED WITH A SEALING RING

Hendrik W. Wolters, Diepenheim, Netherlands, assignor to Hawo B.V., Goor, Netherlands

Filed Mar. 26, 1980, Ser. No. 134,096

Int. Cl.³ B29C *1/14*; B29D *9/00, 23/02*; B29F *1/022*

U.S. Cl. 425—116 **8 Claims**



1. Apparatus for making a tubular article having an annular groove in an inner surface thereof and for forming an annular seal ring in said groove, the combination comprising:

a core element surrounded by a shell member, said core element and said shell member having therebetween an at least partly cylindrical mold cavity, an axially displaceable annular element at least partly defining an outer wall of said mold cavity and said core element at least partly defining an inner wall of said mold cavity and also at least partly defining a channel, which can be closed, communicating with said mold cavity and an injection port in said displaceable annular element.

4,268,238

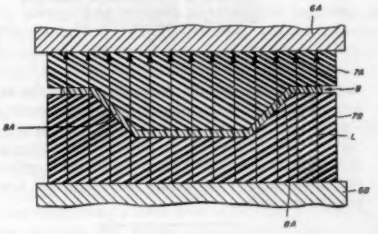
FLOW MOLDING

Michel Marc, Wellesley, Mass., assignor to Clint, Inc., Natick, Mass.

Continuation-in-part of Ser. No. 886,055, Mar. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 853,127, Nov. 21, 1977, abandoned. This application Oct. 29, 1979, Ser. No. 88,776

Int. Cl.³ B29H *5/26*

U.S. Cl. 425—174.8 E **13 Claims**



1. Flow molding apparatus comprising;

means defining an electrically conductive mold having a non-planar cavity therein for receiving a material that is to be finally formed into a non-planar three-dimensional finished piece,

a diaphragm disposed in the cavity having a material on one side thereof for forming at least one surface of the piece,

and means for establishing an electromagnetic heating field across the mold,

said mold comprising a pair of electrode means having facing surfaces that extend in parallel along the length of the cavity so as to establish heat field lines substantially perpendicular to piece at points therealong,

said facing surfaces of the electrode means and both surfaces of the diaphragm all being congruent.

4,268,239

TUBULAR EXTRUSION DIE

F. John Herrington, Jr., Holcomb, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 910,953, May 30, 1978, abandoned. This application Nov. 27, 1979, Ser. No. 97,769

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—467 **2 Claims**

1. A die for extruding a tubular sheet of thermoplastic film material comprising:

(a) a housing having a longitudinal opening therethrough defining a first axis;

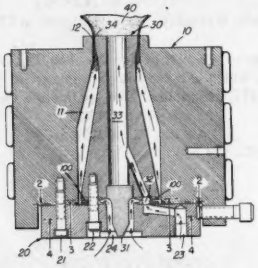
(b) an elongated mandrel positioned within said housing opening and spaced therefrom to form an annular conduit extending in the direction of said axis;

(c) a base plate connected to said housing at the upstream end thereof;

(d) a plurality of means for spacing said mandrel from said base plate to provide a space therebetween, each of said spacing means having an axis parallel to said first axis whereby said mandrel and said base plate have spaced apart juxtaposition walls extending radially from said first axis and in communication with said annular conduit;

(e) each of said spacing means having a first groove formed in one of said mandrel and said base plate walls extending

substantially radially from said first axis to one side of said one of said spacing means and tangentially from said one of said spacing means, each of said spacing means having a second groove formed in one of said mandrel and said base plate walls extending substantially radially from said first axis to another side of said spacing means and tangen-



tially from said spacing means, whereby the tangential extensions of each one of said grooves intersect; and

(f) means for introducing molten thermoplastic material through said base plate into said space between said mandrel and said base plate whereby such thermoplastic material flows radially outwardly from said first axis to said annular conduit.

4,268,240

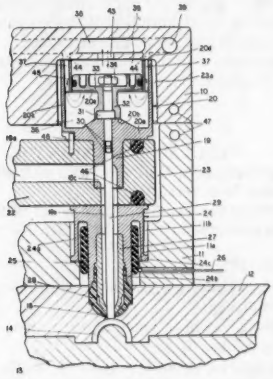
ACTUATING MECHANISM FOR GATE VALVE OF INJECTION NOZZLE

Herbert Rees, Willowdale, and Robert D. Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems, Bolton, Canada

Division of Ser. No. 867,506, Jan. 6, 1978, Pat. No. 4,173,448. This application May 25, 1979, Ser. No. 42,348

Int. Cl.[3] **B29F** *1/03, 1/08*

U.S. Cl. 425—548 **4 Claims**



1. In an injection-molding machine including a hot-runner structure with a sprue channel for conveying liquefied plastic material from a pressure chamber to a plurality of heated nozzles, each nozzle defining an injection gate within a mold plate, and a like number of valves for alternately blocking and unblocking respective injection gates,

the improvement wherein said structure comprises:

a distributing plate traversed by part of said sprue channel and provided with heating means for maintaining the fluidity of said plastic material;

a backing plate spaced from said distributing plate supporting said mold plate, each of said nozzles having a body spacedly surrounded by a thin-walled cylindrical skirt, said body traversing an aperture in said backing plate formed with a transverse shoulder, said skirt resting on said shoulder for holding said backing and distributing plates separated from each other;

heating means in the space between the body of each nozzle and the surrounding skirt, said heating means being in contact with said body but separated from said skirt; and

a cover plate spaced from said distributing plate on the side opposite said backing plate, said valves each including a thin-walled cylinder in line with the respective nozzle lodged in said cover plate and abutting said distributing plate for holding them separated with limited thermal contact therebetween, said valves and the skirts of said nozzles constituting the only support for said distributing plate on said backing and cover plates.

4,268,241

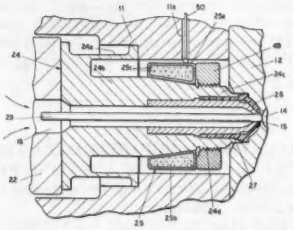
HEATED INJECTION NOZZLE

Herbert Rees, Willowdale, and Robert D. Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems, Bolton, Canada

Continuation of Ser. No. 867,505, Jan. 6, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 56,855

Int. Cl.[3] **B29F** *1/03, 1/08*

U.S. Cl. 425—549 **8 Claims**



1. In an injection-molding machine including a hot-runner structure with a sprue channel for conveying liquefied plastic material to an injection gate of a mold plate, said sprue channel being formed in part by a nozzle with a tubular body of good thermal conductivity having a downstream extremity in engagement with said mold plate, and heater means closely surrounding said body in the vicinity of said gate,

the improvement wherein said nozzle is provided with a highly heat-conductive tubular insert defining a terminal part of said sprue channel, said insert being received in an annular recess of said body and having a tip separated from said extremity by a surrounding clearance occupied by an annular heat shield;

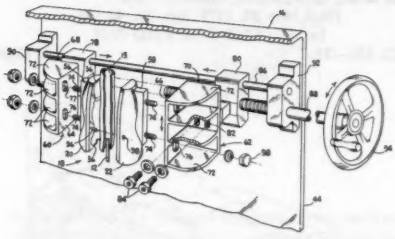
said heater means comprising an annular shell externally seated on a portion of said body adjacent said extremity and spacedly surrounded by the wall of a bore formed in a cooled supporting member, said nozzle being provided at an end remote from said extremity with a skirt separated by a substantially cylindrical air gap from said body and bearing upon said supporting member, said air gap having an outer diameter exceeding that of said shell and substantially corresponding to that of said bore whereby an annular space accommodating said shell in spaced relationship with said supporting member is formed around said body.

4,268,242

PEDAGOGIC MOLDING APPARATUS

Howard Natter, c/o Honatech, 400 Walnut St., Yonkers, N.Y. 10701

Filed Mar. 17, 1977, Ser. No. 778,680
Int. Cl.[3] B29C *17/07*
U.S. Cl. 425—182 6 Claims



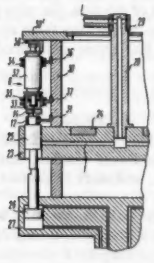
1. A pedagogic molding apparatus for instruction in the techniques of blow molding, said apparatus comprising means for extruding a hollow cylindrical parison along a vertical axis, at least one mold set, the mold set including a pair of thin walled mold segments, the apparatus further including mold supporting means including a pair of carriages, means providing horizontal translational movement of the carriages toward and away from each other, a pair of jaws, each jaw having two perpendicularly oriented panels, one panel abutting one of the mold segments and the other panel abutting a respective carriage, means adjustably securing each jaw to its respective carriage, and means adjustably mounting each mold segment to the one panel, each jaw further including a plurality of web means for cooling the mold segments, each web means extending from the one panel to the other panel, the mold set further including pilot means adapted to assist registration of the mold segments in a closed position whereby a student can set up the apparatus, practice and observe the techniques of blow molding.

4,268,243

MACHINE FOR MOULDING ARTICLES FROM THERMOPLASTIC POLYMERIC MATERIALS

Lev N. Koshkin, 3 Samotechny pereulok, 23, kv. 54, Moscow; Valery M. Semenov, ulitsa Fevralskaya, 11, kv. 11, Klimovsk Moskovskoi oblasti; Jury A. Repin, ulitsa Simferopolskaya, 19, kv. 59, Klimovsk Moskovskoi oblasti; Anatoly M. Pozdnyakov, ulitsa Simferopolskaya, 19, kv. 71, Klimovsk Moskovskoi oblasti, and Nikolai Z. Lutskov, p/o Znamya Oktyabrya, 5, kv. 12, Podolsk Moskovskoi oblasti, all of U.S.S.R.

Continuation of Ser. No. 859,098, Dec. 9, 1977. This application Jul. 25, 1979, Ser. No. 60,721
Int. Cl.[3] B29F *1/00*
U.S. Cl. 425—575 3 Claims



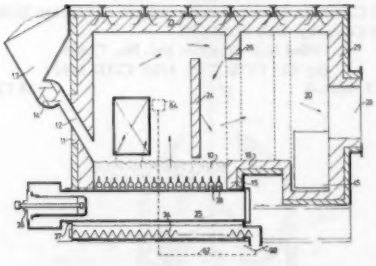
1. A machine for molding articles from thermoplastic polymeric materials comprising a continuously driven endless first conveyor transporting a first plurality of mold halves each having a gate, said continuously driven endless first conveyor transporting a second plurality of other mold halves in synchronism with the first plurality of mold halves for effectively continuously selectively placing individual paired mold halves into registry for forming jointly individual travelling molds for molding individual articles therein, a second driven conveyor having gate-defining means spaced thereon defining gate passages positioned in registry with the individual gates of the molds of said first conveyor selectively for delivery of a melted thermoplastic polymeric material into the individual molds therethrough and means including rotors over which the second conveyor passes to place the gate-defining means in and out of registry with the individual molds during travel of said driven first conveyor and said second conveyor, a rotor driven synchronously with both conveyors and over which both conveyors pass having injection cylinders for injecting said melted thermoplastic polymeric material into the individual molds through the individual gate passages when in registry with said molds, means for delivery of said melted thermoplastic polymers material to said injection cylinders, means for actuating the cylinders individually into positions for alternately receiving the melted thermoplastic polymeric material and for injecting the melted thermoplastic polymeric material into the molds when a corresponding gate-defining means defining a gate passage is in registry with a corresponding mold means comprising a rotor over which the first conveyor passes for opening the molds automatically during travel thereof after removal of the gate-defining means from said molds for removal of the molded articles therein, and the gate-defining means being less in number than the number of molds.

4,268,244

FLUID BED FURNACES

Harry Dawson, Rochdale, England, assignor to G. P. Worsley & Company Limited, England

Filed Apr. 2, 1979, Ser. No. 26,383
Int. Cl.[3] F23D *19/02*
U.S. Cl. 431—170 12 Claims



1. A fluid-bed furnace having, in a combustion chamber, a fluidised bed of incombustible particulate material within which fuel is to be burnt, and a removable elongate chamber having a single extension surrounded by and extending through the bed material from one end of the bed, said single extension housing a bed preheating burner extending from said one end of the chamber and said chamber being connected to spaced upstanding discharge pipes or ducts extending from upper parts of the chamber extension into the bed material to supply fluidising combustion promoting gas into the bed material substantially over the whole bed.

4,268,245

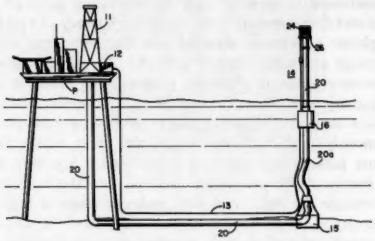
OFFSHORE-SUBSEA FLARES

John F. Straitz, III, Meadowbrook, Pa., assignor to Combustion Unlimited Incorporated, Elkins Park, Pa.

Continuation-in-part of Ser. No. 868,711, Jan. 11, 1978, abandoned. This application Sep. 12, 1979, Ser. No. 74,783

Int. Cl.[3] **F23D** *13/20*

U.S. Cl. 431—202 **20 Claims**



1. In combination,

an offshore platform having a supply of combustible waste gas and means for supplying fuel gas,

an offshore flare for combustion of waste gas in spaced relation to said platform and having a burner at its free end,

said flare having a pilot to which fuel gas is supplied for igniting the waste gas delivered to said burner,

means on said platform for activating said pilot,

control means on said flare for said pilot,

a submerged conduit for delivery of waste gas to said burner for combustion, and

submerged connecting means between said platform and said flare comprising

means for delivery of fuel gas to said pilot,

and

connecting means between said activating means on said platform and said control means on said flare.

4,268,246

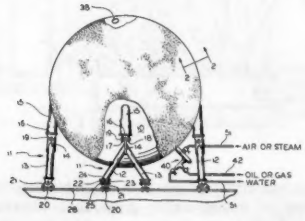
METHOD AND APPARATUS FOR METAL OBJECT HEAT TREATMENT

Orwill G. Sikora, Houston, Tex., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Sep. 21, 1979, Ser. No. 77,606

Int. Cl.[3] **F27D** *7/00, 3/00;* **C21D** *1/62*

U.S. Cl. 432—4 **16 Claims**



9. A method comprising:

applying a low heat retention, thermal shock resistant insulation on one substantially entire surface of a metal shell enclosing a space,

heating the space enclosed by the metal shell by means of hot gases with venting of the hot gases from the shell-enclosed space,

supplying atomized water into the shell-enclosed heated space to controllably cool said space, and

venting steam from the cooling shell-enclosed space.

4,268,247

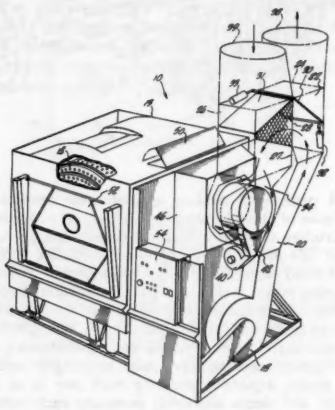
METHOD FOR DRYING FABRICS

Benjamin H. Freze, Garden Grove, Calif., assignor to Challenge-Cook Bros., Incorporated, Industry, Calif.

Filed May 24, 1979, Ser. No. 42,134

Int. Cl.[3] **F26B** *5/04;* **F26D** *7/04*

U.S. Cl. 432—21 **36 Claims**



1. A method for drying fabrics comprising the steps of:

(a) introducing a hot drying gas into a drying zone containing wet fabrics and moisture-laden gas, the drying gas being maintained at a sufficiently high temperature of from about 300° to about 600° F., a sufficiently low relative humidity of less than about 10%, and a sufficiently high pressure greater than atmospheric pressure so that (i) moisture is evaporated from the fabrics, (ii) the pressure of the moisture-laden gas in the drying zone is greater than atmospheric pressure, and (iii) the relative humidity of the moisture-laden gas in the drying zone is from about 15% to about 65%;

(b) tumbling the fabrics in the drying zone;

(c) discharging a portion of the moisture-laden gas from the drying zone directly to the atmosphere;

(d) withdrawing the remainder of the moisture-laden gas from the drying zone; and

(e) forming the hot drying gas by the steps of (i) increasing the pressure of the withdrawn gas, (ii) heating the withdrawn gas, and (iii) combining the withdrawn gas with a dilution gas in an amount sufficient to about equal the amount of moisture-laden gas discharged from the drying zone, said amount of dilution gas which is combined with the withdrawn gas comprising from about 5 to about 20% by volume of the hot drying gas introduced into the drying zone.

4,268,248

PORTABLE PREHEATER

Robert L. Wilbur, Southwest Harbor, and Carl R. Pearson, Manset, both of Me., assignors to Lincoln A. Wilbur, Rangeley, Me.

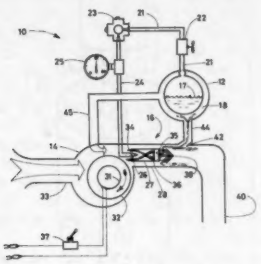
Filed Nov. 5, 1979, Ser. No. 91,595

Int. Cl.[3] **C21D** *9/70;* **F24J** *3/02;* **F02M** *15/00;* **F24H** *1/00*

U.S. Cl. 432—62 **18 Claims**

18. In an engine preheater or preheater for other uses, using fuel of the gas cylinder type for delivering hot air, the improvement comprising:

warming receptacle means for receiving and supporting a fuel gas cylinder said receptacle including means for heating at least a portion of the fuel cylinder to maintain fuel



in the cylinder at a sufficient temperature for rapid vaporization and delivery of fuel from the cylinder, said heating means including electrical heating element means.

4,268,249

ORTHODONTIC BRACKET AND METHOD OF RETAINING A WIRE THEREIN

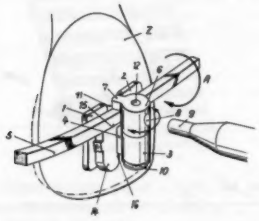
Rolf Förster, Pforzheim, Fed. Rep. of Germany, assignor to Bernhard Förster GmbH, Pforzheim, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 138,219

Claims priority, application Fed. Rep. of Germany, May 16, 1979, 2919640

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—10 **5 Claims**



1. In an orthodontic bracket comprising flange means adapted to be secured to a tooth of a patient, a bearing member having a neck portion connected to said flange means and a through hole on an axis which is transversely spaced from said flange means, and a rotary catch member mounted in said through hole for rotation on said axis and defining with said neck portion and said flange means a channel which is disposed on one side of said bearing member and open opposite to said neck portion and adapted to receive a wire so that the latter is engageable with said flange means, said rotary catch member being formed with actuating means which are peripherally spaced from said channel and engageable by an implement for rotating said rotary catch member, said rotary catch member being rotatable on said axis to a retaining position and in said retaining position being adapted to retain a wire in said channel,

the improvement residing in that

a U-shaped member is detachably fitted over said neck portion and has a crosspiece extending in said channel,

said channel is adapted to receive a square-section wire in engagement with said U-shaped member, and

said rotary catch member is adapted in said retaining position to retain said square-sectionwire in said channel and in engagement with said U-shaped member.

4,268,250

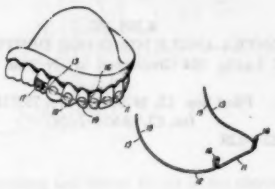
ORTHODONTIC APPLIANCE

James J. Reeve, 545 Pharr Rd., NE., Atlanta, Ga. 30305

Continuation of Ser. No. 797,985, May 18, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 54,253

Int. Cl.³ A61C *7/00*

U.S. Cl. 433—20 **13 Claims**



1. An orthodontic arch wire for use with orthodontic brackets comprising a unitary spring wire section which is substantially U-shaped in the plane of the natural dental arch and includes laterally spaced arms which are curved throughout the majority of their distal length in a plane substantially perpendicular to the said plane of the said arch, said curves being sloped in one direction only, whereby said arch wire can apply gentle and consistent pressure to all teeth in the dental arch simultaneously.

4,268,251

BORING NEEDLE DEVICE FOR TREATMENT OF A DENTAL ROOT CANAL

Mitsuo Takasugi, 74 Kuritaya, Kanagawa-ku, Yokohama, Japan 221, and Yoshio Okuyama, 13-7 Shimouma 3-chome, Setagaya-ku, Tokyo 154, Japan

PCT No. PCT/JP78/00026, § 371 Date Jul. 17, 1979, § 102(e) Date Jul. 16, 1979, PCT Pub. No. WO79/00300, PCT Pub. Date May. 31, 1979.

This PCT application filed Jul. 16, 1979, Ser. No. 101,862

Claims priority, application Japan, Nov. 17, 1977, 52-153480; Sep. 13, 1978, 53-113261

Int. Cl.³ A61C *5/02*

U.S. Cl. 433—75 **8 Claims**

1. A boring needle device for treatment of a dental root canal, comprising a grip member (4) having a head portion (2) and a shaft portion (3) centrally depending from said head portion, a needle (1) having its proximal end coaxially embedded and secured in said shaft portion, and a sleeve member (6) closely fitted on said grip member (4) in an elastic relationship therewith, the fitting surfaces of said grip and said sleeve members (4) and (6) having a plurality of axially spaced annular grooves and ridges (5), (7) formed thereon spaced from each other at a determined distance, thus providing means permitting said grip member (4) to closely slide relative to said sleeve portion (6) stepwisely by a minute amount and be self-retained

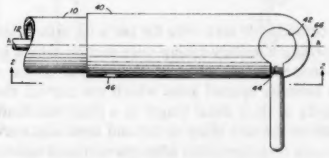
in one of a plurality of desired positions defined by respective ones of said grooves and ridges formed on said sleeve member.

4,268,252

CONTRA-ANGLE HEAD FOR DENTISTRY

Leopold P. Lustig, 304 Greenwood St., Newton Centre, Mass. 02159

Filed Sep. 13, 1979, Ser. No. 75,013
Int. Cl.³ A61C *1/14*
U.S. Cl. 433—128 **8 Claims**



1. A contra-angle head for a dental handpiece comprising a rigid tubular housing member elongated axially to provide an alley open at a first end for receiving a drive shaft and having at the second end a chamber with an access opening through a side of said housing member for receiving a dental tool rotatable on a tool axis that is transverse to said housing axis, a latch member in the form of a thin-walled tubular shell slidingly enclosing a portion of said housing member including said second end and being movable relative to said housing member, said latch member having a two-part aperture in its wall overlying said access opening of said tool chamber, said two-part aperture having a first part which is large enough to allow a tool to pass into and out of said access opening, and a second part which is an elongated relatively narrow extension from said first part and has a dimension that is smaller than said access opening for retaining a tool in said chamber, retaining means for keeping said latch member on said housing member and operative to restrict motion of said latch member relative to said housing member between a first limit in which said first part of said aperture is in register with said access opening, and a second limit in which said second part of said aperture overlies said access opening.

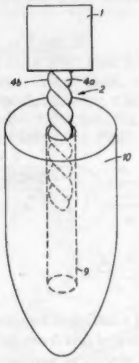
4,268,253

DOWEL POST FOR DENTAL AND MEDICAL PROSTHETIC DEVICES

Michael J. Gross, 14 Edith Rd., London, England (W 14), and Christopher H. Turner, Cherry Tree Cottage, Hursley, Nr. Winchester, Hampshire, England

Filed Dec. 26, 1979, Ser. No. 107,270
Int. Cl.³ A61C *5/08*
U.S. Cl. 433—221 **6 Claims**

1. A dowel post for anchoring a dental or medical prosthetic device comprising a head on which said device may be formed or mounted and a shaft extending therefrom for insertion into a previously prepared parallel-sided blind hole, and secured therein by a cement, wherein said shaft is of substantially constant diameter along its length and is provided with a plurality of concave flutes helically intertwined about the axis of said shaft and co-extending substantially along the length thereof at a pitch angle of 70° or less to the axis of the shaft, said concave flutes being contiguous around the circumference



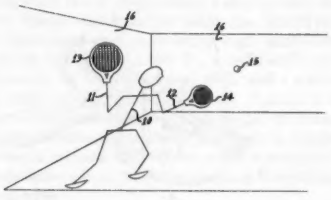
of the shaft, and providing said shaft with a substantially uniform polygonal section along its length.

4,268,254

METHOD OF ENHANCING BIMANUAL DEXTERITY

Everett N. McCormick, 5049 River Point Rd., Jacksonville, Fla. 32207

Filed Dec. 14, 1979, Ser. No. 103,611
Int. Cl.³ A63B *23/00*
U.S. Cl. 434—247 **7 Claims**



1. Method of enhancing bimanual dexterity of a person having a dominant hand and arm and a nondominant hand and arm which comprises the person participating in an athletic exercise wherein a bouncing ball is projected toward the person equipped in each hand with an implement for striking the ball and returning it in the direction from which it was projected, the implement employed in the nondominant hand having substantially better physical characteristics for striking the ball than the implement employed in the dominant hand.

4,268,255

AURAL REPRESENTATION OF EVENTS

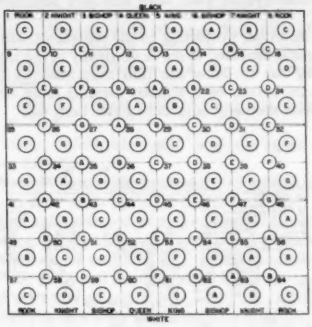
Clifford J. Gillis, 121 Avon St., Malden, Mass. 02148, and Alfred B. Ramage, 35 Charles St., Winthrop, Mass. 02152

Filed Sep. 17, 1979, Ser. No. 75,902
Int. Cl.³ G09B *19/22*
U.S. Cl. 434—128 **6 Claims**

1. The method of providing an aural representation of a past sequence of movements of chess pieces which comprises:

forming a grid key having musical notes representing areas of the grid associated therewith, said grid being so constructed as to provide a visual perception of the said sequence of movements of chess pieces; and

aurally representing said sequence of movements of chess pieces by the representative musical notes associated with



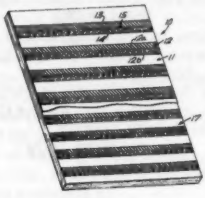
said grid key which define the sequence of movements of said chess pieces.

4,268,256

INSTRUCTIONAL WRITING PAPER FOR PERCEPTUALLY IMPAIRED CHILDREN

Ilene J. Moskowitz, 2611 NW. 56th Ave., Apt. 407, Lauderhill, Fla. 33313

Filed Dec. 14, 1979, Ser. No. 103,960
Int. Cl.³ G09B *11/04*
U.S. Cl. 434—162 **4 Claims**



1. An instructional writing paper system for perceptually impaired children comprising, in combination:
   a. a plurality of sheets of paper,
   b. a plurality of spaced parallel bands on each of said sheets of paper,
   c. each band comprising a pair of co-extensive contiguous stripes,
   d. a first sub-plurality of said bands being of mutually different colors differing from the color of said sheets of paper,
   e. said first sub-plurality of bands being sub-divided into a plurality of second sub-pluralities of bands, the stripes of which are of mutually gradated color intensities from vivid to complete fade-out, and
   f. the outer edges of said stripes and contiguous edges of the stripes of each of said bands being defined by contrastingly dark lines.

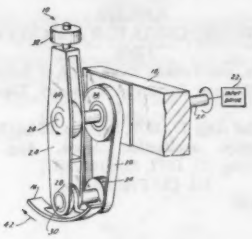
4,268,257

WHEEL SIMULATOR

Luis F. Villar, Westbury, N.Y., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed Dec. 17, 1979, Ser. No. 104,072
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—373 **6 Claims**

1. A wheel movement simulator comprising:
   a frame: a drive shaft mounted for rotation to said frame;
   a rotor secured to said shaft for rotation therewith;
   a wheel sector secured for rotation to said rotor;
   means for rotating said drive shaft; and



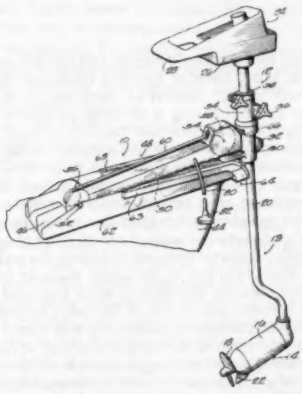
   means for rotating said wheel sector in the direction opposite to the rotation of said drive shaft as said drive shaft rotates.

4,268,258

MOUNTING ARRANGEMENT FOR ELECTRIC OUTBOARD MOTOR

W. Wayne Beem, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sep. 27, 1979, Ser. No. 79,488
Int. Cl.³ B63H *21/26*
U.S. Cl. 440—63 **13 Claims**



1. A mounting arrangement for an outboard motor including an upper unit, a lower unit carrying a propeller and means connecting the upper and lower units including an elongated member, said mounting arrangement comprising a mounting bracket adapted to be mounted on a boat hull, a support bracket mounted on the elongated member for rotational and axial movement of the elongated member relative to said support bracket, a support arm pivotally connected to said support bracket and to said mounting bracket for pivotal movement of the outboard motor relative to said mounting bracket between a storage position and an operating position, a steering friction member mounted on the elongated member for adjustable frictional engagement therewith so as to frictionally restrain rotational movement of the elongated member relative to said steering friction member, means for releasably holding said steering friction member in a stationary position wherein rotation of said steering friction member about the axis of the elongated member is prevented when the outboard motor is in the operating position, and means for moving said steering friction member, in response to movement of said support arm from the operating position toward the storage position, from

the stationary position to a second position wherein rotation of said steering friction member about the axis of the elongated member is permitted.

4,268,259

MULTI-SPEED SPROCKETS FOR A BICYCLE AND THE LIKE

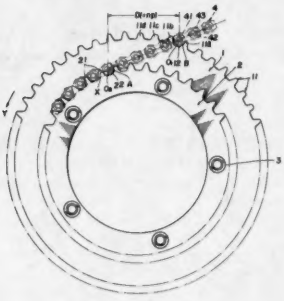
Takashi Segawa, and Tadashi Ueno, both of Sakai, Japan, assignors to Shimano Industrial Company Limited, Osaka, Japan

Filed Aug. 17, 1978, Ser. No. 934,619

Claims priority, application Japan, Aug. 25, 1977, 52/114127[U]; Aug. 25, 1977, 52/114128[U]

Int. Cl.³ F16H *55/30*

U.S. Cl. 474—160 **8 Claims**



1. Multi-speed sprockets for a bicycle and the like, comprising at least one small diameter sprocket having at the outer periphery thereof a large number of teeth and, at least one larger diameter sprocket having at the outer periphery thereof a larger number of teeth than said number of teeth at the smaller diameter sprocket, each of said sprockets being assembled in such a manner that: the center of a space between the teeth of one pair of adjacent teeth at said larger diameter sprocket is positioned on a tangent line with respect to the smaller diameter sprocket, said tangent line being drawn from the center of a space between teeth of one of a pair of adjacent teeth at the smaller diameter sprocket and along the travel of a driving chain when switched to the larger diameter sprocket from the smaller diameter sprocket in mesh with said chain; and a distance between said center of the space between said teeth at the smaller diameter sprocket and said center of the space between said teeth at the larger diameter sprocket is made substantially equal to an integer multiple of the pitch of said chain, said larger diameter sprocket including a first group of teeth among the large number of teeth of a first configuration different from the configuration of a second group of the larger number of teeth to receive a chain moving towards the edge of said larger diameter sprocket with less interference with the chain during shifting than is experienced by said second group.

4,268,260

FEEDING MECHANISM OF BAG MANUFACTURING MACHINE

Sohei Kobayasi, Yokohama, Japan, assignor to Modern Machinery Company, Ltd. and Small Business Promotion Corporation, both of, Japan

Filed Jun. 29, 1979, Ser. No. 53,346

Claims priority, application Japan, Jun. 29, 1978, 53-77975

Int. Cl.³ B31B *1/16, 1/64*

U.S. Cl. 493—194 **3 Claims**

1. A feeding mechanism for a bag manufacturing machine, comprising:

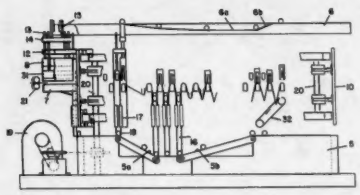
(a) a circulation path mounted in parallel to a film conveyance path on a horizontal plane,

(b) a plurality of transfer bodies which are rotatably supported and suspended in said circulation path;

(c) each of said transfer bodies having:

(i) a carrier bar projecting almost horizontally from the side of said circulation path to the outside to form the film conveyance path with mutually adjacent carrier bars;

(ii) a tension bar projecting to the outside of said circulation path, mounted to move vertically at the side of said carrier bar to draw the film supported by mutually adjacent carrier bars, thereby forming loops in the film between mutually adjacent carrier bars; and



(iii) a clamp block movable to descend into pressured contact with the upper surface of said carrier bar; and

(d) said circulation path being provided with a first cam rail for guiding the vertical movement of said tension bar, and a second cam rail for guiding the vertical movement of said clamp block according to the vertical movement of said tension bar, said first and second cam rails being disposed in parallel.

4,268,261

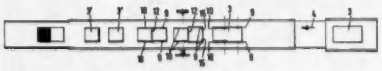
MACHINE FOR THE PRODUCTION OF PACKAGING WRAPPERS

Karl-Heinz Kohmann, and Wolfgang Heiber, both of Dusseldorf, Fed. Rep. of Germany, assignors to Firma Kohmann GmbH & Co., Mettmann, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,664

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758968; Dec. 2, 1978, 2852257

Int. Cl.³ B31B *21/14*

U.S. Cl. 493—231 **33 Claims**

1. An apparatus for the continuous production of phonograph record covers from cut rectangular blanks of flat material comprising:

a passageway for traveling of the blanks along a track in their longitudinal direction, said passageway equipped with

a pair of abrading devices, each abrading device arranged on one side of the passageway to reduce the longitudinal edge portions of the blanks of flat material,

a folding station adjacent the abrading devices for folding at least one longitudinal edge portion of the blank,

a means for coating at least one longitudinal edge portion with adhesive material said means disposed adjacent to the folding station,

a means for folding the blank about a transverse line,

a bonding station for securing the longitudinal edge portions together, and

a swivel mount for adjusting the height of each abrading device without affecting the lateral or angular position of each abrading device having a swivel axis located parallel to the abrading surface of each abrading device,

wherein the edge portions bonded together form a layer having a thickness in the area of the bonding of the same thickness at the unabraded blanks of material.

4,268,262

CLEAR, COLD-STABLE LIQUID WASHING AGENT CONCENTRATES

Wolfgang Bechstedt, Dusseldorf-Garath, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Oct. 19, 1979, Ser. No. 86,478

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847438

Int. Cl.[3] C11D *9/08, 10/04, 17/08, 9/30*

U.S. Cl. 8—137 12 Claims

1. A clear, cold-stable liquid washing agent concentrate consisting essentially of:

(A) from 25% to 30% by weight of a potassium soap of C_{12-18}-fatty acids having from 60% to 100% of the fatty acid of acids selected from the group consisting of C_{12-14}-alkanoic acids, oleic acid, and mixture thereof, wherein the amount of saturated C_{16-18}-fatty acids is from 1% to 15% by weight of the fatty acids and the amount of stearic acid does not exceed 3% by weight of the fatty acids,

(B) from 5% to 9% by weight of an ethoxylate of from 6 to 8 ethoxylate units onto a primary alcohol selected from the group consisting of linear C_{9-12}-alkanols and C_{9-12}-2-methylated alkanols,

(C) from 6% to 8% by weight of a sodium C_{10-14}-alkyl-benzenesulfonate,

(D) from 0.1% to 0.7% by weight of an alkali metal salt of substituted stilbenesulfonic acid optical brighteners,

(E) from 0.7% to 4% by weight of potassium hydroxide,

(F) from 0 to 6% by weight of triethanolamine,

(G) from 12% to 18% by weight of alcohols selected from the group consisting of C_{1-3}-alkanols and mixtures of C_{1-3}-alkanols with up to 35% by weight of the mixture of hydrotropes selected from the group consisting of C_{1-4}-alkoxy-C_{2-3}-alkanols, C_{1-4}-alkoxy-C_{2-3}-alkoxy-C_{2-3}-alkanols and alkali metal salts of alkylbenzenesulfonates having from 1 to 2 alkyl groups with a total of 1 to 3 carbon atoms, and

(H) the remainder up to 100% of water, where the amount of water is from 30% to 50% by weight and the concentration of the total compounds A to E does not exceed 50% by weight of the concentrate.

12. A method of washing soiled textiles consisting of the steps of adding a clear, cold-stable liquid washing agent concentrate consisting essentially of:

(A) from 22.5% to 35% by weight of a potassium soap of C_{12-18}-fatty acids having from 60% to 100% of the fatty acid of acids selected from the group consisting of C_{12-14}-alkanoic acids, oleic acid, and mixtures thereof,

(B) from 5% to 9% by weight of an ethoxylate of from 5 to 10 ethoxylate units onto a primary alcohol selected from the group consisting of linear C_{8-14}-alkanols and C_{8-14}-2-methylated alkanols,

(C) from 4% to 10% by weight of a sodium C_{10-14}-alkylbenzenesulfonate,

(D) from 0.05% to 1% by weight of an alkali metal salt of substituted stilbenesulfonic acid optical brighteners,

(E) from 0.1% to 5% by weight of potassium hydroxide,

(F) from 0 to 6% by weight of triethaolamine,

(G) from 8% to 20% by weight of alcohols selected from the group consisting of C_{1-3}-alkanols and mixtures of C_{1-3}-alkanols with up to 35% by weight of the mixture of hydrotropes selected from the group consisting of C_{1-4}-alkoxy-C_{2-3}-alkanols, C_{1-4}-alkoxy-C_{2-3}-alkoxy-C_{2-3}-alkanols and alkali metal salts of alkylbenzenesulfonates having from 1 to 2 alkyl groups with a total of 1 to 3 carbon atoms, and

(H) the remainder up to 100% by water, where the amount of water is at least 30% by weight and the concentration of the total of components A to E does not exceed 50% by weight of the concentrate, to softened water containing soiled textiles in an automatic washer in such amounts that from 3 to 10 gm of said concentrate are present per kilogram of dry textiles, agitating said textiles in said concentrate-containing softened water, draining, rinsing and mangling said textiles and recovering clean textiles.

4,268,263

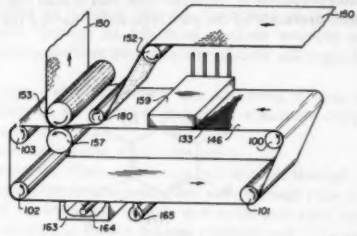
METHOD AND APPARATUS FOR IMMERSION PRINTING OF PILE FABRICS

James E. Meredith, Summerville, Ga., assignor to Bigelow-Sanford, Inc., Greenville, S.C.

Filed Feb. 27, 1980, Ser. No. 125,150

Int. Cl.[3] D06B *1/10, 11/00*

U.S. Cl. 8—149 15 Claims



1. In a process of applying a coloring agent to a fabric having pile on one face thereof wherein an area of pile on the face of the fabric is introduced into a receptacle comprising a movable belt having a multiplicity of compartments with upstanding side walls therebetween and containing a coloring agent in liquid form, and the receptacle and the fabric are brought into mutual engagement by exerting pressure against the back of the fabric, the improvement comprising the steps of:

driving said belt in a generally horizontal direction at a predetermined speed;

feeding said fabric toward said region of engagement;

rotating a pressure roller having a protuberance-bearing surface adjacent said belt, at a peripheral speed equal to said predetermined speed and in synchronism with the movement of said belt, adjacent said region of engagement, so that the protuberances of said pressure roller urge said fabric toward each of said compartments; and

supplying said coloring agent to said compartments upstream of said region of engagement in accordance with a desired color pattern to be printed on said fabric.

6. An apparatus for applying a coloring agent to a fabric having pile on one face thereof wherein an area of pile on the face of the fabric is introduced into a receptacle, comprising a movable belt having a multiplicity of compartments with upstanding side walls therebetween for containing a coloring agent in liquid form, and means for bringing the receptacle and the fabric into mutual engagement by exerting pressure against the back of the fabric, the improvement comprising:

means for driving said belt in a generally horizontal direction at a predetermined speed;

a plurality of rollers for feeding said fabric toward said region of engagement;

a counter roller for supporting said belt at said region of engagement;

a pressure roller disposed adjacent said belt opposite said counter roller, said pressure roller having a protuberance-bearing surface;

means for rotating said pressure roller at a peripheral speed equal to said predetermined speed and in synchronism with the movement of said belt, so that the protuberances of said pressure roller urge said fabric toward each of said compartments; and

means for supplying said coloring agent to said compartments upstream of said region of engagement in accordance with a desired color pattern to be printed on said fabric.

4,268,264

COMPOSITION FOR HAIR DYEING WHICH CONTAINS A PARA BASE AND AN ORTHO BASE

Jean F. Grollier, Paris; Andree Bugaut, Boulogne-Billancourt; Patrick Andrillon, Aulnay-sous-Bois, and Chantal Fourcadier, Paris, all of France, assignors to L'Oreal, Paris, France

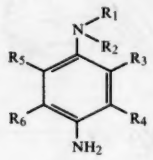
Filed Apr. 5, 1979, Ser. No. 27,363

Claims priority, application France, Apr. 6, 1978, 78 10278

Int. Cl.[3] A61K *7/12, 7/135*

U.S. Cl. 8—410 25 Claims

1. A composition suitable for dyeing keratin fibres, which comprises, as the sole oxidative dyestuffs, at least one oxidative dyestuff precursor of the para type and at least one oxidative dyestuff precursor of the ortho type, said at least one oxidative dyestuff precursor of the para type either having the formula:



in which:

(i) R_1 and R_2 are both a hydrogen atom, and R_3, R_4, R_5 and R_6 are a hydrogen atom, a lower alkyl group or a lower alkoxy group with the proviso that at least two of R_3, R_4, R_5 and R_6 are a lower alkyl group or a lower alkoxy group; or

(ii) one of R_1 and R_2 is hydrogen, and the other is an alkyl-O-alkyl group substituted by a hydroxyl group, or an alkyl group substituted by an acylamino, ureido, mesylamino, furfuryl or sulphonamido group or by a sulphoamido group which is substituted by one or two lower alkyl groups, and R_3, R_4, R_5 and R_6 are all hydrogen or at least one of them is a halogen atom or a lower alkyl group and the remainder; or

(iii) one of R_1 or R_2 is a lower alkyl group or a lower alkyl group substituted by a hydroxyl, alkoxy, furfuryl or tetrahydrofurfuryl group, R_3 is a hydrogen atom, a lower alkyl group, a halogen atom or a lower alkoxy group, R_4 is hydrogen, or a halogen atom if R_3 is hydrogen, and R_5 and R_6 are hydrogen; or

(iv) R_1 is hydroxyalkyl or alkyl and R_2 is hydroxyalkyl, or alkyl substituted by an acylamino, mesylamino, carbamyl, sulphonamido or piperidino group, or R_1 and R_2 form, together with the nitrogen atom to which they are bonded, a piperidino or morpholino group, and R_3, R_4, R_5 and R_6 are all hydrogen or at least one of them is a lower alkyl group or a halogen atom and the remainder are hydrogen; or

(v) R_1 and R_2 are both an alkyl group, R_4 is a halogen atom or an alkyl or alkoxy group, and R_3, R_5 and R_6 are hydrogen;

or being a bis-condensed precursor which is an N,N'-diarylalkylenediamine in which the aryl groups are substituted in the para position relative to the carbon bonded to the amine group by a OH, an amino group or an amino group which is substituted by an alkyl, hydroxyalkyl or aminoalkyl group, or a salt of said precursor;

and said at least one oxidative dyestuff precursor of the ortho type is an ortho-aminophenol, orthodiphenol or ortho-phenylenediamine in which the 4- and 5-positions relative to the OH group of the aromatic nuclei of the ortho-aminophenol and the ortho-diphenol are substituted by a hydrogen atom, and in which the nitrogen atom of the ortho-aminophenol or one of the nitrogen atoms of the ortho-phenylenediamine is substituted or substituted by an alkyl group or an alkyl group substituted by a hydroxyl or alkoxy group, or a cosmetically acceptable salt of said precursor.

4,268,265

NATURAL DYESTUFFS FOR GELATINE CAPSULES

Andre R. Von Wattenwyl, Reinach, Switzerland, assignor to Parke, Davis & Company, Morris Plains, N.J.

Filed Jul. 13, 1979, Ser. No. 57,485

Claims priority, application Switzerland, Jul. 24, 1978, 7976/78

Int. Cl.[3] C09B *61/00*

U.S. Cl. 8—438 8 Claims

1. A process for stabilizing a natural dyestuff for gelatine capsules against degradation by light or oxidation which comprises

A. dissolving said dyestuff in a suitable solvent;

B. contacting the resulting dyestuff solution with a finely divided adsorbent and immobilizing said dyestuff on said adsorbent thereby stabilizing said dyestuff;

C. separating the resulting stabilized dyestuff from said solution; and

D. drying said stabilized dyestuff

and E. adding said stabilized dyestuff into gelatin for capsules.

4,268,266

PROCESS FOR DYEING AND PRINTING CELLULOSE FIBRES WITH REACTIVE DYESTUFFS

Udo-Winfried Hendricks; Dietrich Hildebrand, both of Odenthal, and Robert Kuth, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

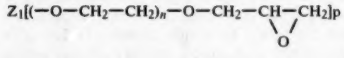
Filed Aug. 27, 1979, Ser. No. 69,691

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1978, 2838274

Int. Cl.[3] D06P *3/66, 1/613, 1/607, 1/38*

U.S. Cl. 8—543 2 Claims

1. In the dyeing and printing of fibres and textile materials containing cellulose wherein the fibres or textile materials are contacted with a padding liquor or printing paste containing a water-soluble reactive dyestuff in the absence of alkali or alkaline compounds, the improvement which comprises incorporating in the padding liquor or printing paste at least one compound of the formula



wherein

Z_1 is a monovalent to tetravalent aliphatic hydrocarbon radical with 1-5 carbon atoms,

n is 0-10, and

p is 1-4.

4,268,267

PHTHALOCYANINE REACTIVE DYESTUFFS

Karl H. Duchardt; Manfred Groll, both of Cologne, and Klaus Wunderlich, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

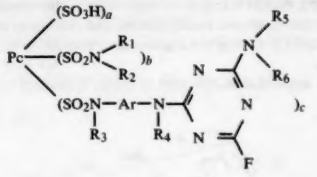
Filed Oct. 19, 1979, Ser. No. 86,611

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1978, 2849068

Int. Cl.[3] C09B *62/06, 47/04*

U.S. Cl. 8—549 11 Claims

1. Phthalocyanine dyestuffs which, in the form of the free acid, have the formula



wherein

Pc is the radical of a copper phthalocyanine or nickel phthalocyanine,

R_1 and R_2 are hydrogen or optionally substituted alkyl, or R_1+R_2 together with N are a 5-membered or 6-membered heterocyclic ring,

R_3 and R_4 are hydrogen or optionally substituted alkyl,

Ar is arylene substituted by SO_3H or/and COOH and optionally by other atoms or groups of atoms,

R_5 and R_6 are hydrogen, optionally substituted alkyl, cycloalkyl or aralkyl or an optionally substituted aryl radical which is free from sulphonic acid and carboxylic acid groups, or R_5+R_6 together with N are a 5-membered or 6-membered heterocyclic ring,

a is 1 to 3,

b is 0 to 2,

c is 1 or 2 and

$a+b+c \leqq 4$,

and mixtures thereof.

4,268,268

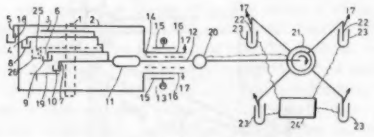
METHOD AND APPARATUS FOR CHARACTERIZATION OF CELLS, PARTICLES, AND LIQUIDS

Alvin S. Blum, 2350 Del Mar Pl., Fort Lauderdale, Fla. 33301

Continuation-in-part of Ser. No. 972,670, Dec. 26, 1978, and Ser. No. 968,907, Dec. 13, 1978, and Ser. No. 898,998, Apr. 21, 1978. This application May 16, 1979, Ser. No. 39,377

Int. Cl.³ G01N *33/56, 35/08*

U.S. Cl. 23—230 B **24 Claims**



22. A method of analyzing suspensions of cells, particles and the like or for analyzing solutions by the use of suspensions of cells, particles and the like, which comprises the steps of:

(a) forming a plurality of flowing reaction mixtures, each of said mixtures comprising a liquid phase and a particulate suspension phase including a suspension of particulate material such as cells, cell membranes, bacteria, viruses, and the like, reaction taking place in said mixture to form a reaction product, at least, on said particulate material;

(b) flowing each said reaction mixture in turn continuously along a conduit;

(c) flowing each said reaction mixture in turn through electrical separation means to separate reacted particulate material from certain other constituents of said reaction mixture by movement of said constituents across at least one permeable membrane means and into at least one other separate flowing recipient stream under the force of electrical field means;

(d) and determining at least one constituent of interest by analysis of the separated particulate suspension and/or the separated recipient fluid stream by determining means downstream of said electrical separation means.

4,268,269

FIELD TEST METHOD FOR ESTIMATION OF CONCENTRATION OF ORGANIC MATERIALS IN WATER

Clare B. Proudfoot, Munster, Ind., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 71,821, Sep. 4, 1979, abandoned. This application Jan. 25, 1980, Ser. No. 115,518

Int. Cl.³ G01N *31/04, 31/08, 33/00*

U.S. Cl. 23—230 M **8 Claims**

1. An analytical process for quantitatively identifying concentrations of triazoles in aqueous solutions which comprises:

(a) a separation step which comprises:

(1) passing an aqueous solution containing at least one triazole through an adsorbing medium wherein said adsorbing medium preferentially adsorbs said triazoles; and

(2) eluting said triazole from said adsorbing medium by addition of an effective amount of a suitable eluting solvent; and

(b) a quantification step which comprises:

(1) passing the eluate containing said triazole through an ion exchange resin wherein said ion exchange resin is in metal ion form and wherein said metal ions react with said triazole to form a colored product; and

(2) eluting excess metal ions from said ion exchange resin by addition of an effective amount of an aqueous inorganic salt to expose the adsorbed metal ion triazole colored product; and

(3) comparing said product to a visual standard to determine concentration.

4,268,270

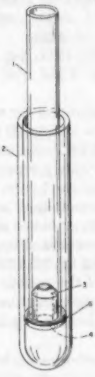
GLYCOSYLATED HEMOGLOBIN MEASUREMENT

Kenneth H. Gabbay, and Paul M. Gallop, both of Chestnut Hill, Mass., assignors to Children's Hospital Medical Center, Boston, Mass.

Filed Apr. 30, 1979, Ser. No. 34,755

Int. Cl.³ G01N *33/52, 33/66, 33/72, 33/58*

U.S. Cl. 23—230.3 **40 Claims**



1. In the process of measuring glycosylated hemoglobin, the steps comprising:

providing a sample containing hemoglobin including an unknown quantity of glycosylated hemoglobin,

oxidizing said glycosylated hemoglobin thereby to generate aldehydic compounds, and

determining the quantity of aldehydic compounds so generated, said quantity of aldehydic compounds being directly proportional to said unknown quantity of glycosylated hemoglobin.

18. A combination of test equipment and reagents for measuring glycosylated hemoglobin, comprising in combination

a container for receiving a liquid sample containing hemoglobin including an unknown quantity of glycosylated hemoglobin,

a first chemical reagent selected to oxidize said glycosylated hemoglobin upon addition to said container containing said sample, to generate aldehydic compounds in said container, and

a second chemical reagent selected to react with said aldehydic compounds upon addition to said container to produce products having a measurable characteristic uniquely distinctive of said unknown quantity.

4,268,271

REDUCTION OF THE FOULING POTENTIAL OF HIGH SODIUM COAL

Daniel J. Curtin, Danville, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Nov. 26, 1979, Ser. No. 97,116
Int. Cl.[3] C10L *9/00*
U.S. Cl. 44—1 R **8 Claims**

1. Method for reducing the potential of sodium-containing coal to foul coal-burning equipment, which comprises:

selectively crushing said coal so that the resulting particles thereof have a diameter of no more than about 4 inches, a portion of said particles have a diameter of more than 1 inch and another portion of said particles have a diameter of 1 inch or less,

separating said crushed coal into a low potential fouling fraction containing primarily particles of more than 1 inch in diameter and a high potential fouling fraction containing primarily particles of 1 inch or less in diameter, and

recovering the coal fraction having a low potential for fouling.

5. Method of claim 1 which includes the steps of removing sodium from said high potential fouling fraction and subsequently combining said fractions.

4,268,272

EXOTHERMIC COMPOSITION AND WARMING BAG CONTAINING THE SAME

Miyako Taura, Chigasaki, Japan, assignor to Eiichi Ito and Teruchika Taura, both of, Japan

Filed May 22, 1979, Ser. No. 41,344
Int. Cl.[3] F24J *1/00, 3/04*
U.S. Cl. 44—3 R **3 Claims**

1. An exothermic composition for warming bags characterized by being prepared by mixing 20 to 25 parts by weight of an iron powder with a mixed fibrous and carbonaceous powder as impregnated with a solution prepared by dissolving a proper amount of a neutral salt in 8 to 15 parts by weight of an aqueous solution of a 0.05 to 1-normal alkali or alkaline weak acid salt and leaving the mixture as sealed to mature.

3. A warming bag characterized by containing the exothermic composition according to claim 1 in a nonventilative inner bag provided on a part of the surface with a ventilating hole group of pinholes and a nonventilative label covering the hole group and containing said inner bag in a nonventilative outer bag.

4,268,273

KINDLE MAKER

Eugene S. Schneider, 574 Skippack Creek Rd., Collegeville, Pa. 19426, and Kent A. Schneider, Rte. 7, Box 478A, Gainesville, Ga. 30501

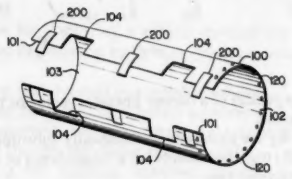
Filed Oct. 9, 1979, Ser. No. 82,711
Int. Cl.[3] C10L *11/08*
U.S. Cl. 44—35 **10 Claims**

1. A kindling-making apparatus comprising:

(a) hollow, open-ended container means having at least one longitudinal slit therealong and having cutout portions therethrough into the interior thereof for receiving a lining material and kindling material thereinside; and

(b) fastening means connected to said container means along said slit for securely closing said container means at said slit.

2. An apparatus as claimed in claim 1, further comprising:



(a) retaining means at the ends of said container means for retaining a lining material folded outward around the ends of said container means.

8. An apparatus as claimed in claim 1, wherein said container means is comprised of two halves and hinge means for connecting said two halves.

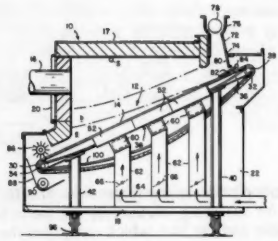
9. An apparatus as claimed in claim 1, further comprising a carrying means affixed to said container means.

4,268,274

GASIFICATION RETORT

Robert A. Caughey, Antrim, N.H., assignor to Forest Fuels, Inc., Marlborough, N.H.

Filed Jul. 9, 1979, Ser. No. 55,386
Int. Cl.[3] C10J *3/20;* **C10S** *3/40*
U.S. Cl. 48—111 **39 Claims**

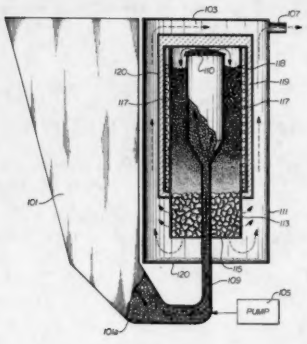


1. A retort for generating combustible gases by progressive destructive distillation of biomass material comprising means defining a chamber, a traveling grate bed supported within the chamber with a space above and a space below the grate bed, means at one end of the grate bed for delivering biomass material into the space above the grate bed onto the upwardly-facing side thereof for movement toward the other end, means within the space at the underside of the grate bed defining a distribution chamber substantially coextensive in width with the grate bed and containing midway of its width a longitudinal opening of Venturi configuration, means for controllably supplying air to the distribution chamber through said opening in an amount to effect destructive distillation and generation of combustible gases, said means for supplying air including a plenum chamber located below said distribution chamber, and means for collecting the combustible gases within the space above the grate bed for distribution.

4,268,275
APPARATUS FOR CONVERTING ORGANIC MATERIAL INTO FUEL

Donald E. Chittick, Newberg, Oreg., assignor to Pyrenco, Inc., Grandview, Wash.

Filed Mar. 7, 1979, Ser. No. 18,118
Int. Cl.[3] C10J 3/00
U.S. Cl. 48—111 8 Claims



1. An apparatus for converting organic material into a gaseous fuel, comprising:

a chamber which includes a first portion which is adapted to receive the organic material, and a second portion which is adapted to receive a base material, such as charcoal, said chamber including a first subchamber, and a second subchamber surrounding said first subchamber, said first subchamber extending upwards into said second subchamber, said apparatus further including means forcing the organic material into said first subchamber near the lower end thereof, so that the organic material tends to move upward through said first subchamber, said first portion being located entirely within said first subchamber, said second portion being located at least partially in said second subchamber, said second subchamber including gas exit means located near the bottom thereof;

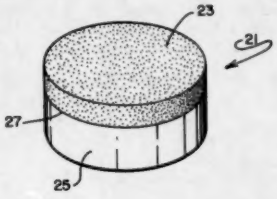
means heating the first portion of said chamber sufficiently that the organic material therein undergoes a pyrolysis reaction, wherein pyrolysis volatiles, including hydrogen, carbon monoxide, water vapor and tars, are driven off from the organic material; and

means for maintaining a region in the second portion of said chamber, and the base maerial present therein, at a reaction temperature which is substantially higher than the pyrolysis temperature of said first portion, wherein the second portion of said chamber is located and arranged relative to the first portion thereof such that the pyrolysis volatiles driven off from the organic material in the first portion of said chamber move through said region of said second portion, the pyrolysis volatiles and the char moving upward and out of the first subchamber into said second subchamber, said reaction temperature being sufficiently high that the tars and water vapor react further to form product gases, comprising substantially hydrogen and carbon monoxide, and an essentially non-tar residue, wherein the product gases exiting from said chamber are characterized by the essential absence of tars.

4,268,276
COMPACT OF BORON-DOPED DIAMOND AND METHOD FOR MAKING SAME

Harold P. Bovenkerk, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 899,780, Apr. 25, 1978, abandoned. This application Feb. 13, 1979, Ser. No. 11,771
Int. Cl.[3] B24D 3/08
U.S. Cl. 51—295 21 Claims



1. In a process for making a compact comprising:

(a) placing within a charge assembly (i) a mass comprised of diamond particles and (ii) a source of diamond catalyst-solvent material; and

(b) subjecting said charge assembly and the contents thereof to thermodynamically stable conditions for the diamond content thereof at temperatures in the range of 1300° C. to 1600° C. and pressures in excess of about 45 kilobars; the improvement which comprises using boron doped diamond particles in step (a).

16. A compact comprising:

(a) a porous mass of self-bonded, boron-doped diamond particles, said mass comprising at least 90% by volume diamond, said particles containing a boron-dopant level between about 0.01% to 0.5% of the doped particle weight; and

(b) a catalyst-solvent material dispersed in the pores of said mass, said material selected from the group consisting of:

(i) a catalytic metal, in elemental form, selected from the group consisting of Group VIII metals Cr, Mn, Ta;

(ii) a mixture of alloyable metals of the catalytic metal(s) and non-catalytic metal(s);

(iii) an alloy of at least two of said catalytic metals; and

(iv) an alloy of the catalytic metal(s) and non-catalytic metal(s).

4,268,277
MULTI-TUBULAR CENTRIFUGAL LIQUID SEPARATOR AND METHOD OF SEPARATION

Mitchel L. Rooker, Tulsa, Okla., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 942,256, Sep. 14, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,017
Int. Cl.[3] B01D 45/12
U.S. Cl. 55—1 5 Claims

1. A liquid-gas separator, including,

a tube adapted to receive in its first end a gas in which liquid is entrained,

means at the first end of the tube for forming a vortex of the liquid and gas entering the first end of the tube which forces the liquid to the internal wall of the tube,

elongated openings through the wall of the tube wherein each elongated opening has a width substantially ¼" and is extended in a plane normal the axis of the tube and wherein the elongated openings are distributed along a substantial length of the tube and wherein the total area of all the openings is at least ten times that of the area of a continuous circumferential opening ¼" wide through the wall of a tube of the same diameter,

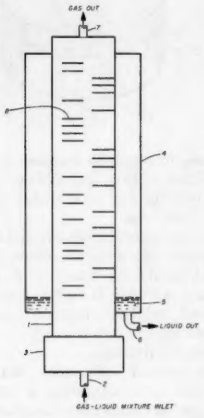
a casing sealed substantially gas tight to the external wall of the tube above and below the elongated openings through

the tube wall and wherein the casing forms a chamber with the external tube wall in which the liquid passing through the elongated openings collects,

the tube having a second end providing a gas outlet from which gas is withdrawn after the liquid has been forced through the tube wall openings,

and a conduit connected to the chamber through which the liquids collected in the chamber are withdrawn.

5. A method for separating gas and entrained liquid with a tube having first and second ends and having elongated openings through the wall of the tube wherein each elongated opening has a width substantially $\frac{1}{8}$" and is extended in a plane normal the axis of the tube and wherein the elongated openings are distributed along a substantial length of the tube and



wherein the total area of all the openings is at least ten times that of the area of a continuous circumferential opening $\frac{1}{8}$" wide through the wall of a tube of the same diameter, including,

conducting gas and entrained liquid into the first end of the tube,

vortexing the gas and liquid to force the liquid through the elongated openings in the wall of the tube,

applying a pressure to the external surface of the tube which is substantially equal to the pressure inside the tube,

collecting the liquid flowing through the wall openings of the tube,

withdrawing the liquids from the collection,

and withdrawing the gas from the second end of the tube.

4,268,278

INORGANIC ANISOTROPIC HOLLOW FIBERS

Emerick J. Dobo, Cary, and Tommy E. Graham, Raleigh, both of N.C., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 906,502, May 16, 1978, Pat. No. 4,175,153.
This application Feb. 5, 1979, Ser. No. 9,579
Int. Cl.³ B01D *53/22*; C04B *35/64*
U.S. Cl. 55—16 **10 Claims**

1. A process comprising

(a) preparing a solution of an organic fiber-forming polymer, containing, in a uniformly dispersed form, a sinterable inorganic material;

(b) extruding the inorganic material-containing polymer solution through a hollow fiber spinneret;

(c) forming a polymeric precursor hollow fiber, laden with the inorganic material, having a radially anisotropic internal void volume wall structure;

(d) treating the polymeric precursor hollow fiber to remove the organic polymer; and

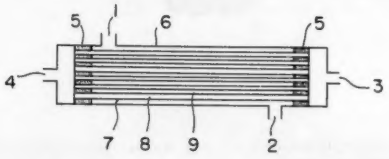
(e) sintering the resulting inorganic material; provided that steps (d) and (e) are conducted under conditions that maintain a radially anisotropic internal void volume wall structure in the hollow fiber.

4,268,279

GAS TRANSFER PROCESS WITH HOLLOW FIBER MEMBRANE

Mizuo Shindo; Takashi Yamamoto, both of Ootake, and Kensuke Kamada, Chiba, all of Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 45,868
Claims priority, application Japan, Jun. 15, 1978, 53-72431
Int. Cl.³ B01D *13/00, 53/22*
U.S. Cl. 55—16 **4 Claims**



1. In a gas transfer process by using the microporous wall membrane of a microporous hollow fiber as contacting wall membrane and placing a liquid inside the hollow fiber and a fluid outside, thereby allowing the gaseous components to transfer to the inside or outside of the hollow fibers, an improved method wherein the improvement comprises using a hollow fiber having

(i) an average micropore diameter in the range of from 0.01 to 0.5μ,

(ii) an internal diameter of the hollow fiber in the range of from 50 to 5,000μ,

(iii) a porosity of the membrane of 10% by volume or more,

(iv) a micropore surface area of the membrane of 5 m^2/g or more, and

(v) an oxygen permeability of the membrane of 1×10^{-6} $cm^3(STP)\cdot cm/cm^2\cdot sec\cdot cmHg$ or more,

and wherein the microporous hollow fiber is polypropylene.

4,268,280

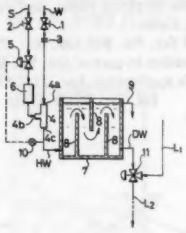
METHOD OF CONTINUOUSLY DEGASSING WATER

Shinichi Fujii, and Hiroshi Hata, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jun. 7, 1979, Ser. No. 46,281
Claims priority, application Japan, Jul. 21, 1978, 53-89168
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—54 **8 Claims**

1. In a method of continuously degassing water in which vapor phase components melted in water are continuously degassed by heating and reducing the pressure of the water, the improvement comprising introducing water into a diffuser at one end thereof, mixing saturated steam into the water in said diffuser along portions between inlet and exhaust thereof

to heat said water and accelerate foaming of said vapor phase components by cavitation created in the water by local drop in pressure and, pooling said water under atmospheric pressure to allow said water to degass.



4,268,281

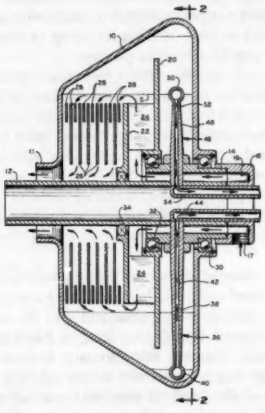
METHOD OF REMOVING PARTICULATE CONTAMINANTS FROM A GAS STREAM

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., City of Commerce, Calif.

Division of Ser. No. 23,208, Mar. 23, 1979, Pat. No. 4,198,218. This application Jul. 27, 1979, Ser. No. 61,211

Int. Cl.³ B01D *47/18*

U.S. Cl. 55—92 **2 Claims**



1. A method of removing particulate contaminants from a stream of transient gas comprising the steps of: wetting the particulate contaminants in the transient gas stream with a liquid; causing the gas stream and wetted particulate contaminants to travel along a first path to a rotating impeller; accelerating the gas stream and the wetted particulate contaminants therein by the action of the impeller and imparting movement of the gas stream and wetted particulate contaminants along a second path at substantially right angles to the first path; exposing the accelerated gas stream and the wetted particulate contaminants therein to a centrifugal force by a rotating chamber to effect a separation of the wetted particulate contaminants from the gas stream and to effect a separation of the liquid from the particulate contaminants; and directing the gas stream to a clean gas outlet along a third path offset from and in opposition to the second path through an energy absorbing means including a series of spaced-apart extended surface plates adapted to rotate about an axis parallel to the first path wherein the third path is generally parallel to the extended surfaces of the plates to effect removal of the remaining particulate contaminants from the gas stream.

4,268,282

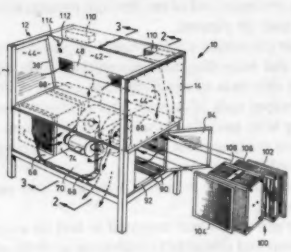
WORK BENCH WITH SELF-CONTAINED AIR CLEANER

Harold L. MacKenzie, Etobicoke, Canada, assignor to Riverwood Enterprises & Manufacturing, Ltd., Toronto, Canada

Filed Nov. 19, 1979, Ser. No. 95,212

Int. Cl.³ B03C *3/04;* **B01D** *50/00*

U.S. Cl. 55—101 **7 Claims**



1. A work bench comprising,

(a) a frame,

(b) a work platform supported by said frame at a predetermined work height in a generally horizontal plane, said work platform having a pair of oppositely disposed end edges, a front edge and a back edge, the front and back edges extending longitudinally between the end edges,

(c) a platform enclosure comprising a first back wall projecting upwardly and forwardly from said back edge of said platform and side walls projecting upwardly from each end edge of said platform, said first back wall being inclined forwardly with respect to the work platform at an angle in the range of 70° to 80°,

(d) a vent passage opening through said first back wall, said vent passage being spaced a substantial distance above said work platform and extending longitudinally of said first back wall along a major portion of the length thereof,

(e) an air filter chamber disposed below said work platform and extending longitudinally between the end edges of the platform, said chamber having at least two filter compartments arranged at longitudinally spaced intervals along said chamber, said filter compartments being spaced from one another by an air extraction compartment, each of said filter compartments having an input passage opening therefrom at said back edge of said work platform, said air extraction compartment having a discharge passage opening outwardly therefrom,

(f) an air plenum disposed rearwardly from said first back wall and communicating between said vent passage and said input passages of said filter compartments,

(g) an air filter unit removably mounted in each filter compartment, each air filter unit having an input end connecting with the input passage of the compartment in which it is housed and an outlet passage communicating with said air extraction compartment,

(h) an air extraction unit mounted in said air extraction compartment and operable to extract air from within said platform enclosure through said vent passage and through said filter units in parallel to discharge through said discharge passage of said extraction compartment.

7. A work bend comprising,

(a) a frame,

(b) a work platform supported by said frame, said work platform having a front to back transverse extent between a front end and a back end thereof and a longitudinal extent between oppositely disposed sides thereof,

(c) a platform enclosure disposed above said platform and comprising a first back wall projecting upwardly from the

back end of the platform and a pair of oppositely disposed side walls projecting upwardly from opposite sides of the platform,

(d) a vent passage opening through said back wall,

(e) an air plenum disposed rearwardly from said back wall and communicating with said vent passage,

(f) a pair of air filter compartments disposed below said platform and each having a through passage extending in the direction of the transverse extent of said platform, said through passage having an input end at the back end of the platform and an output end at the front end of the platform, the input end of the through passage communicating with said air plenum,

(g) an air extraction compartment disposed below said platform and extending between said air filter compartments in the direction of the transverse extent of said platform, said output ends of said air filter compartments communicating with said air extraction compartment, said air extraction compartment having a discharge passage opening outwardly therefrom,

(h) an air filter unit mounted in each of said air filter compartments,

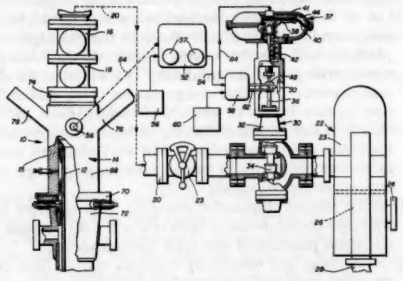
(i) an air extraction unit mounted in said air extraction compartment and operable to withdraw air from said platform enclosure through said vent passage, said air plenum, and each of said air filter compartments and said air extraction compartment to discharge it through said discharge passage.

4,268,283

FLUID CONTROL MEANS FOR GEOTHERMAL WELLS

Allen L. Roberts, Castle Rock, Colo., assignor to W-K-M Wellhead Systems, Inc., Shreveport, La.

Filed Dec. 31, 1979, Ser. No. 108,763
Int. Cl.[3] B01D *19/00*; E21B *43/00*
U.S. Cl. 55—189 **6 Claims**



2. In a geothermal production system, a steam separator, a generally Y-shaped wellhead having a main body and a pair of integral auxiliary body portions diverging from the main body, a casing string mounted within said wellhead below said auxiliary body portions, a fluid supply line extending from said wellhead to said steam separator, a control valve in said supply line to control the fluid flow from the wellhead to the steam separator;

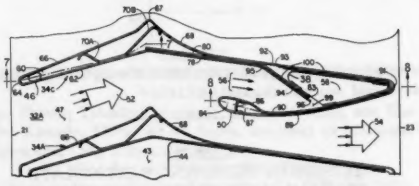
a tubing head in one of said auxiliary body portions, and a flexible tubing supported from said tubing head and extending within the casing string for the injection of selected fluids; the other auxiliary body portion being adapted to receive a test steam probe for acquiring a steam sample from the associated well.

4,268,284

MULTICHANNEL PARTICLE SEPARATOR OF THE ANTI-ICING TYPE

Peter Kent; Richard M. Norris, both of Stratford, Conn., and Alan J. Charlton, Boxford, Mass., assignors to Avco Corporation, Stratford, Conn.

Continuation of Ser. No. 849,239, Nov. 7, 1977, abandoned, which is a continuation-in-part of Ser. No. 692,654, Jun. 4, 1976, abandoned. This application Apr. 23, 1979, Ser. No. 32,604
Int. Cl.[3] B01D *45/16*
U.S. Cl. 55—269 **4 Claims**



1. A particle separator of the anti-icing type useful for separating and removing foreign particles from an airstream supplied to an engine air intake passage, said particle separator comprising:

a housing mounted on said engine, said housing having an open interior with an inlet and an outlet through which air is permitted to pass, said outlet being in communication with said engine air intake passage;

a plurality of channel assemblies mounted in parallel side-by-side relationship within the open interior of said housing and extending from the inlet to the outlet of said housing, said channel assemblies being formed such that adjacent assemblies divide the open interior of said housing into separate passageways each having a turn intermediate its length, said passageways extending from the inlet to the outlet of the housing, said turn of the passageways causing an inertial separation of the foreign particles in the airstream;

each of said channel assemblies being constructed of a plurality of joined walls and further having a projection at its outlet end extending upstream and into the adjacent passageway formed thereby to form a particle collection chamber, said chamber being located downstream of the turn and having an upstream facing opening defined by the walls of the channel assembly and an air dividing upstream facing edge of the projection;

said walls of each of said channel assemblies forming a first cavity within the inlet end of the channel assembly and a first duct within the assembly connecting said first cavity with the particle collection chamber;

said walls also forming a second cavity within the airstream dividing edge and a second duct within the projection connecting said second cavity with the particle collection chamber;

a source of heated air connected to the particle separator housing;

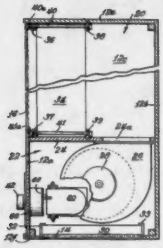
an intake manifold mounted on the housing to receive the heated air and distribute said air to the first and second interior cavities of each of the channel assemblies, said heated air flowing through the first and second ducts to the particle collection chambers; and

a scavenge manifold mounted on said housing in communication with each of the particle collection chambers for receiving and exhausting the foreign particles and heated air therefrom.

4,268,285
AIR FRESHENING APPARATUS

Donald G. Mason, Park Ridge, Ill., assignor to Mason Engineering & Designing Corporation, Rosemont, Ill.

Filed Feb. 11, 1980, Ser. No. 120,665
Int. Cl.[3] B01D *19/00*
U.S. Cl. 55—271 6 Claims

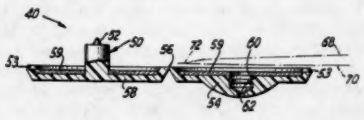


1. In combination with an air filtering apparatus having a cabinet, means for filtering the air as it is moved through said cabinet, and a fan for forcibly moving air through the cabinet and filtering means; the improvement comprising a container of volatile air freshener, means for positioning said container in a predetermined location within the interior of said cabinet in the path of the air being forcibly moved therethrough by said fan, a lid for said container mounted at one side of said container positioning means for swinging movement about a pivotal axis between a first position covering said container to prevent the escape of the volatile air freshener into the air and a second position uncovering the container to permit the escape of the volatile air freshener into the air, and control means including a timer operable from the exterior of said cabinet and selectively energizable for a preselected variable period of time, said timer having an element positioned for operative engagement with said lid, said timer element when said timer is deenergized being in a first position to permit said lid to rest in its first position covering said container, said element being movable to a second position when said timer is energized to effect corresonding movement of said lid to its second position, whereby the escape of volatile air freshener into the air passing through the cabinet may be adjustably regulated in accordance with the setting of said timer.

4,268,286
ATTACHABLE FILTER AND OSTOMY BAG INCLUDING SAME

Peter L. Steer, and John V. Edwards, both of East Grinstead, England, assignors to Kingsdown Medical Consultants Limited, England

Filed Jul. 24, 1980, Ser. No. 171,676
Int. Cl.[3] B01D *46/00*; A61F *5/44*
U.S. Cl. 55—278 8 Claims

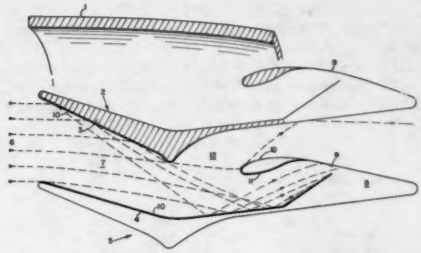


1. An attachable and detachable filter for use with an ostomy bag, said filter comprising a plastics housing member having two sections, each of said sections having a peripheral wall, said sections being joined by an integral hinge between the top of said peripheral walls, one of said sections having at least one recess and the other section carrying at least one sharp-pointed and resilient-headed stud which is a push fit through said recess in the other to clamp together the two sections, there being at least one layer of gas filtering material contained within one or both of said housing sections.

4,268,287
APPARATUS FOR IMPROVING PARTICLE SEPARATOR EFFICIENCY

Richard M. Norris, Stratford, Conn., assignor to Avco Corporation, Stratford, Conn.

Continuation-in-part of Ser. No. 2,070, Jan. 8, 1979, abandoned. This application Sep. 21, 1979, Ser. No. 77,528
Int. Cl.[3] B01D *46/00*
U.S. Cl. 55—306 1 Claim



1. A system for separating particles from an airflow comprising:

a duct having a passage constructed therein to direct the airflow in the desired path;

at least one deflecting surface fixed in the duct in the path of the airflow to deflect said airflow through an angle, thereby creating an inertial separation effect for particles of high mass within the airflow;

means mounted in the duct downstream of the deflecting surface constructed with a wall positioned and shaped to divide the particles of greater inertia within the airflow; and

a compliant coating applied to those portions of the deflecting surface and the dividing wall to form a compliant surface having a low coefficient of friction directly exposed to impingement by the airflow, said coating comprising significant amounts of cellulous nitrate contained in a medium which promotes adherence to the surfaces of the particle separation system.

4,268,288
CYCLONE VACUUM CLEANING APPARATUS

Peter J. Coombs, 89 N. Parker Way, Bountiful, Utah 84010

Filed Jul. 12, 1979, Ser. No. 57,158
Int. Cl.[3] B01D *45/12*
U.S. Cl. 55—337 8 Claims

1. A cyclone separator for a central vacuum cleaning system comprising:

a housing having tangential inlet means and exhaust outlet means, said inlet means directing the incoming dirt-laden air in a circular path so as to provide centrifugal separation of dirt from the incoming air;

suction means mounted in said housing for drawing the dirt-laden air through said inlet means;

first baffle means mounted in said housing adjacent to said tangential inlet means and communicating with said suction means, said first baffle means being funnel-shaped, its walls being downwardly and inwardly inclined so as to direct the incoming dirt-laden air inwardly in a circular path of decreasing cross-sectional area, said first baffle means terminating at its lower end in a vertical cylindrical outlet member; and

second baffle means including a vertical sleeve member telescopically connected to the vertical cylindrical outlet member of said funnel-shaped first baffle means, said first

and second baffle means together forming an exhaust path through their center and leading to said exhaust means, said second baffle means additionally comprising an outwardly-flared skirt member connected to the base of said vertical sleeve member, said skirt extending toward the walls of said housing so as to redirect the descending circulating air outwardly toward the walls of said housing thereby channeling the circulating air away from the exhaust path provided through the center of said first and second baffle means so as to permit further separation of dirt prior to exhausting the circulating air through said exhaust means.

4,268,289

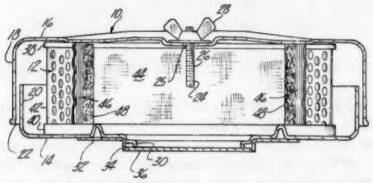
FLAME ARRESTING AIR FILTER ELEMENT

Mardy Polaner, Birmingham, Mich., assignor to Barbron Corporation, Detroit, Mich.

Continuation of Ser. No. 28,949, Apr. 11, 1979, abandoned, which is a continuation of Ser. No. 825,807, Aug. 19, 1977, abandoned, which is a continuation of Ser. No. 649,144, Jan. 14, 1976, abandoned. This application Jan. 28, 1980, Ser. No. 115,828

Int. Cl.³ B01D *50/00, 46/24, 46/52*

U.S. Cl. 55—486 **5 Claims**



1. An improved air filter element of the type having an annulus of porous material for the filtering of particulate contaminants in air entering a carburetor intake or the like, wherein the improvement comprises: an annulus formed by longitudinally folding an elongated section of expanded metal foil, stretching the folded section by applying opposed longitudinal forces, rolling the stretched section into annular form and pressing the section to reduce its axial dimension and increase its density, the metal annulus being concentrically disposed within the annulus of porous material in order to provide flame arresting capabilities of the filter element.

4,268,290

AIR FILTERS

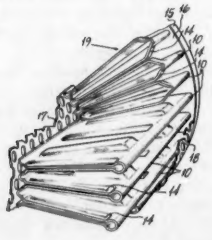
Ross B. Barrington, Berkhamstead, England, assignor to Engineering Components Limited, England

Filed May 31, 1979, Ser. No. 44,294

Claims priority, application United Kingdom, May 31, 1978, 25329/78

Int. Cl.³ B01D *46/10*

U.S. Cl. 55—521 **5 Claims**



1. A paper filter frusto-conical element having a frusto-conical sloping wall with pleats extending lengthwise thereof, said pleats including dimples embossed into the paper from which the pleat is formed and arranged to abut an adjacent pleat for control of separation of adjacent pleats, the height of said dimples situated at positions spaced along said sloping wall being graduated lengthwise of the element so as to provide controlled pleat separation over at least most of the length of the filter element.

4,268,291

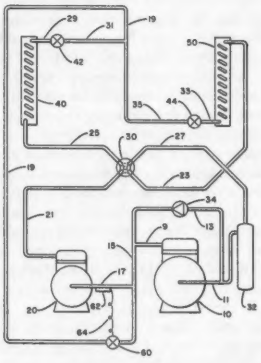
SERIES COMPRESSOR REFRIGERATION CIRCUIT WITH LIQUID QUENCH AND COMPRESSOR BY-PASS

Peter L. Cann, Canastota, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,259

Int. Cl.³ F25B *5/00*

U.S. Cl. 62—117 **5 Claims**



1. A refrigeration circuit having a low stage compressor with a compressor discharge line and suction line, high stage compressor having a compressor suction line and a discharge line, an interconnecting line connecting the compressor discharge line of the low stage compressor to the compressor suction line of the high stage compressor, an evaporator and a condenser which comprises:

a by-pass conduit connecting the low stage compressor suction line to the interconnecting line such that gaseous refrigeration may by-passs the low stage compressor; and

a check valve mounted in the by-pass conduit to prevent flow therethrough from the low stage compressor discharge line to the low stage compressor suction line such that during operation of low stage compressor the low stage compressor discharge line is at a higher pressure than the low stage compressor suction line and the check valve then prevents refrigeration flow through the by-pass conduit and when the low stage compressor is not operating refrigerant may freely flow through the by-pass conduit to the high stage compressor suction line without impediment from the check valve; and

a quench conduit connecting the condenser to the interconnecting line for supplying liquid refrigerant thereto; and

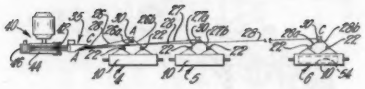
a control device for regulating the amount of liquid refrigerant flowing through the quench conduit as a function of the temperature of the gaseous refrigerant entering the high stage compressor, said liquid refrigerant flashing to a gas as it is metered through the control device.

4,268,292

METHOD AND APPARATUS FOR FORMING GLASS FILAMENTS

Donald T. Johnson, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Sep. 24, 1979, Ser. No. 77,972
Int. Cl.[3] C03B 37/02
U.S. Cl. 65—2 3 Claims



3. In a method of forming glass filaments by:

(a) establishing a plurality of forming operations wherein each forming operation is comprised of:

(i) supplying a plurality of streams of glass to be attenuated into continuous filaments, the paths of the free falling streams defining a zone;

(ii) positioning the filaments advancing from the feeder external to the zone;

(iii) gathering the filaments into a strand by a first guide means external to said zone;

(iv) positioning an applicator means external to the zone;

(v) applying a coating to the filaments at a region external to the zone at said applicator means, said region being along the path of advancement of the filaments intermediate the streams and the point of gathering the filaments into a strand; and

(vi) positioning a secondary attenuation means external to the zone to attenuate the streams into filaments and advance the filaments as waste;

(b) providing a primary attenuation means adapted to simultaneously attenuate the streams from the feeders into filaments, the primary attenuation means having a roll associated therewith; and

(c) positioning the feeders, applicator means, first guide means, and secondary attenuation means such that all of the advancing strands are moved along paths external to such zones and in the absence of contact between the waste and any other of said strands;

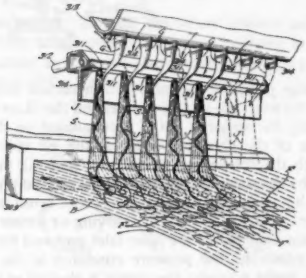
the improvement comprising: providing a second guide means having a plurality of grooves adapted to orient said strands as a spaced apart array at said primary attenuation means wherein each of said grooves is vertically and laterally spaced from the groove adjacent thereto such that each of said strands initially contacts the surface of said roll at a point radially spaced from each of the adjacent strands.

4,268,293

STABILIZATION OF GLASS FEED IN FIBERIZATION BY TORATION

Marcel Levecque, deceased, late of Birchrunville, Pa.; by Marc Levecque, administrator, Paris, France; Jean A. Battigelli, and Dominique Plantard, both of Rantigny, France, assignors to Saint-Gobain Industries, Neuilly-sur-Seine, France

Continuation-in-part of Ser. No. 926,954, Jul. 20, 1978, Pat. No. 4,199,338, and Ser. No. 917,480, Jun. 21, 1978, Pat. No. 4,194,897, which is a continuation of Ser. No. 762,789, Jan. 25, 1977, Pat. No. 4,102,662, which is a continuation-in-part of Ser. No. 676,755, Apr. 14, 1976, Pat. No. 4,118,213, and Ser. No. 557,282, Mar. 11, 1975, Pat. No. 4,015,964, which is a continuation-in-part of Ser. No. 353,984, Apr. 24, 1972, Pat. No. 3,885,940, said Ser. No. 676,755, is a continuation-in-part of Ser. No. 557,282, , said Ser. No. 926,954, is a continuation-in-part of Ser. No. 834,530, Sep. 17, 1977, Pat. No. 4,145,203, which is a continuation-in-part of Ser. No. 762,789,. This application Oct. 31, 1979, Ser. No. 90,078
Claims priority, application France, Dec. 22, 1978, 78 36189
Int. Cl.[3] C03B 37/04
U.S. Cl. 65—5 16 Claims



1. A method for making fibers from attenuable material, comprising generating a gaseous blast, generating a gaseous jet directed in a path toward the blast, the jet being generated in a region spaced laterally from the blast thereby inducing ambient gas into the jet flow in the space between said region and the blast, preventing induction of ambient gas at one side of the jet by shielding that side with a shielding element having a shielding surface which is extended substantially rectilinearly along the path of the jet in a zone intermediate the blast and the region of generation of the jet, the jet flow downstream of the shielded zone being of cross-sectional dimension smaller than the blast and having kinetic energy per unit of volume higher than that of the blast and the jet penetrating the blast and thereby creating a zone of interaction with the blast, and delivering a stream of attenuable material in attenuable condition into the influence of the ambient gas being induced by the jet toward the side thereof opposite to the shielded side thereby providing for delivery of the stream of attenuable material into the zone of interaction of the jet with the blast.

4,268,294

METHOD AND APPARATUS FOR PRODUCING FIBER PRODUCT

Sidney J. Laughlin, 2411 S. 61st, Apt. H4, Temple, Tex. 76501, and Ralph J. Claypool, 8010 Greenslope, Austin, Tex. 78759

Filed Nov. 15, 1979, Ser. No. 94,470
Int. Cl.[3] C03B 37/04
U.S. Cl. 65—10 4 Claims

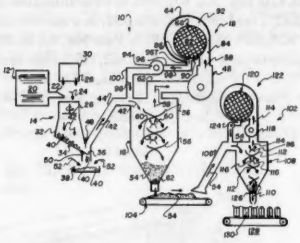
1. Apparatus for producing mineral fiber product from a stream of molten slag, said apparatus comprising in combination:

means for attenuating the slag to produce mineral fiber product and flywool;

a separator including a settling chamber for separating the fiber product from the flywool for delivery through a discharge outlet for further processing;

a collector conduit for conveying fiber product and flywool from the attenuating means to the separator;

a filter for recovering flywool from the air exhausted from the settling chamber including a filter housing and a drum mounted for rotation therein, the drum having a screen surface for accumulating a lint deposit, the housing forming an air stream inlet, a lint discharge outlet, and a clean air outlet, the filter housing outwardly surrounding the screen surface and defining an annular lint accumulation zone extending from the inlet port downstream to the lint



discharge port, the rotatable screen surface being interposed between the air stream inlet and the clean air outlet whereby the airborne lint is accumulated on the screen surface of the rotatable drum as the air stream flows through the screen and out of the clean air outlet, and whereby the accumulated flywool lint deposit is presented to the lint discharge outlet as the screen drum turns; and,

means for entraining flywool in a moving air stream from the separator chamber to the filter inlet port and for producing a relatively low pressure condition at the lint discharge outlet whereby the screen is cleaned as the accumulated flywool is suctioned from the screen, entrained in the moving air stream, and reintroduced into the settling chamber.

4,268,295

METHOD FOR MANUFACTURING CRUSHED SANDS FROM BLAST FURNACE WATER GRANULATED SLAGS

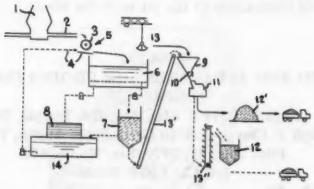
Katsuji Yamamoto, Suita; Yuichiro Iwasaki, Ibaraki; Akira Adachi, Takatsuki; Toshiro Kawata, Tonclabayashi; Keisuke Nagano, Nara; Seiichi Fujita, Takaishi, and Mikio Harada, Sakai, all of Japan, assignors to Nakayama Steel Works, Limited, Osaka, Japan

Continuation of Ser. No. 876,119, Feb. 8, 1978, abandoned. This application Jul. 6, 1979, Ser. No. 55,456

Claims priority, application Japan, Oct. 13, 1977, 52-123341

Int. Cl.[3] C03B *19/10*

U.S. Cl. 65—19 **8 Claims**



1. A continuous flow method for manufacturing hard and heavy crushed sands from ferrous blast furnace melted slags comprising the steps of continuously cooling ferrous blast furnace melted slags flowing from a blast furnace by heat exchange with a cooling media to a temperature between 850° C. to 1300° C. while maintaining the ferrous blast furnace melted slags out of direct contact with water and then immediately rapidly further cooling the cooled slags by direct contact with water thereby producing coarse grain hard quality water processed slags.

4,268,296

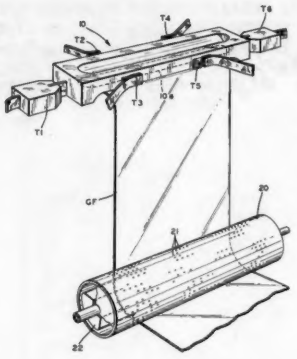
METHOD AND APPARATUS FOR MANUFACTURE OF GLASS FILM

Lawrence V. Pfaender, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 3, 1979, Ser. No. 99,457

Int. Cl.[3] C03B *5/02, 17/06*

U.S. Cl. 65—90 **6 Claims**



1. An apparatus for drawing glass film of a thickness less than 0.003 inch, comprising a block of hot glass-resistant material, means mounting said block in underlying relationship to a pool of molten glass, said block defining an elongated slot like orifice having a width in the range of 0.10 inch to 0.40 inch through which a film of glass may be continuously drawn, the walls of said orifice being electrically conductive, a plurality of electrical junctions connected to spaced areas of said walls, and power means for flowing electric current through said junctions and said orifice walls to maintain the lateral end portions of said orifice walls at a lower temperature than the central portions, thereby maintaining both edge areas of the drawn film at a lower temperature than the center area.

5. A method of controlling the temperature of a thin film of glass drawn from a slot-like metallic walled orifice, the orifice having a width not exceeding 0.40 inches, comprising the steps of passing separate electrical currents through the central portions of the orifice walls and through each of the lateral end portions of the orifice walls, and controlling said electrical currents to produce a temperature differential of the central portions of the orifice walls in excess of the temperature of the lateral end walls of the orifice, and drawing a film of glass of a final thickness not in excess of 0.003 inches through said orifice.

4,268,297

METHOD OF PRESTRESSING AT LEAST ONE BENT SHEET OF A SANDWICH TYPE SAFETY GLASS

Julius K. Gorner, Witten, Fed. Rep. of Germany, assignor to BFG Glassgroup, France

Filed Aug. 29, 1979, Ser. No. 70,788

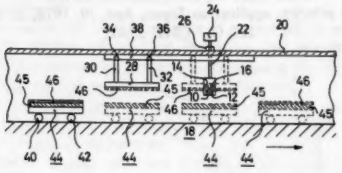
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1978, 2840834

Int. Cl.[3] C03B *27/04*

U.S. Cl. 65—104 **19 Claims**

1. In a process for pre-stressing at least one of the individual

panes of a compound safety pane, which panes are laid on top of one another on a bending die, including the steps of traversing the bending die with said panes lying thereon through a bending furnace in a direction of travel which is parallel to the bending axis of the compound safety pane after traveling through a bending zone, heating said panes to the softening temperature in the bending furnace, bending said heated panes through the influence of gravity, and effecting the glazing of the uppermost individual pane with cool air in a temperature zone above the transformation point but below the deformation point of glass, the improvement consisting of the step of treating exclusively and uniformly only the upper outside surface of the upper bent individual pane with cool air to effect glazing of said upper pane.



2. In a process for pre-stressing at least one of the individual panes of a compound safety pane, which panes are laid on top of one another on a bending die including the steps of traversing the bending die with said panes lying thereon through a bending furnace in a direction of travel which is parallel to the bending axis of the compound safety pane after traveling through the bending zone, heating said pane to the softening temperature in the bending furnace, bending said heated panes through the influence of gravity, and effecting the glazing of the uppermost individual pane with cool air in a temperature zone above the transformation point but below the deformation point of glass, the improvement consisting of the steps of lifting the topmost pane up from the bottom pane and treating the upper outer surface and lower inner surface of the lifted pane with cool air to effect glazing thereof.

4,268,298

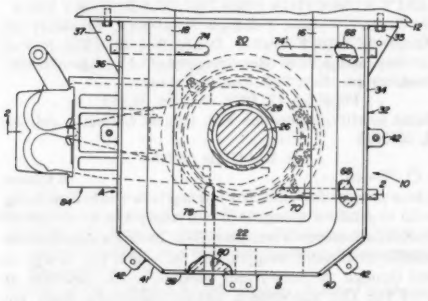
MOLTEN GLASS FEEDING BOWL

Chester K. Rhett, Bainbridge Island, Wash., assignor to Maul Technology Corporation, Millville, N.J.

Filed Nov. 25, 1977, Ser. No. 854,940

Int. Cl.³ C03B *7/06, 7/08*

U.S. Cl. 65—327 **7 Claims**



1. A molten glass feeder comprising a metal housing, a refractory bowl in said housing, insulation between said housing and bowl, said bowl having means defining a discharge orifice in the bottom wall of said bowl for discharge of glass therefrom, said bowl and housing having straight parallel side walls connected to a front wall, at least one electrode extending through aligned openings in said front or side walls of said bowl and housing at an elevation above the elevation of said bottom wall of said bowl, each electrode being perpendicular to the wall supporting the same, each electrode projecting into said bowl for electrically heating molten glass in said bowl, each electrode being removable outwardly along its longitudinal axis, said housing and bowl having two electrode holes in each of said front and side walls thereby defining six electrode positions, the number of electrode holes exceeding the number of electrodes, the electrode holes not containing an electrode being plugged, whereby the number and position of electrodes may be selectively varied.

4,268,299

METHOD AND COMPOSITION FOR PLANT GROWTH REGULATION CONTAINING TRIFLUOROMETHYL 1,3,4 OXADIAZOL BENZOATES

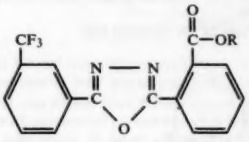
Robert K. Howe, Bridgeton, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 934,440, Aug. 17, 1978, Pat. No. 4,210,762. This application Nov. 8, 1979, Ser. No. 92,313

Int. Cl.³ A01N *43/82;* C07D *271/10*

U.S. Cl. 71—76 **9 Claims**

1. A method of regulating the natural growth and development of plants which method comprises applying to said plants or their habitat an effective plant growth regulating amount of a compound of the formula



wherein R is H, lower alkyl or agriculturally acceptable cations.

4,268,300

TRI/PENTA/AZA-TETRACYCLO-DODECA/ENES/DIENES OR-DECAENES

Rolf Platz, Mannheim; Werner Fuchs, Ludwigshafen; Norbert Rieber, Mannheim; Ulf-Rainer Samel, Mutterstadt; Johann Jung, and Bruno Wuerzer, both of Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

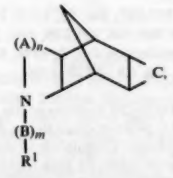
Division of Ser. No. 781,767, Mar. 28, 1977, Pat. No. 4,189,434. This application Jan. 16, 1980, Ser. No. 112,789

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615878

Int. Cl.³ A01N *43/80;* C07D *487/04*

U.S. Cl. 71—76 **2 Claims**

1. A polycyclic nitrogen-containing compound of the formula



where A denotes the radical —N=N—, B denotes the radicals —SO_2—,

—S—, C denotes the radicals —N=N— or

n denotes one of the integers 0 and 1, m denotes one of the integers 0 and 1, and R^1 denotes 1,2-benzisothiazol-5-yl, and R^2 and R^3 are identical or different and each denotes $(B)_m$-R^4, R^4 having the same meanings as R^1, and salts of these compounds.

2. A process for reducing crop plant growth height wherein the plants or the soil are treated with an effective amount of a polycyclic nitrogen-containing compound of the formula of claim 1 to reduce crop plant growth height.

4,268,301

1,4-BENZOTHIAZINES

Tamon Uematsu, Toyonaka; Shunichi Hashimoto, Takarazuka, and Hiromichi Oshio, Minoo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

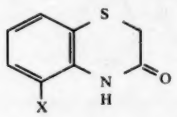
Filed Apr. 10, 1979, Ser. No. 28,801

Claims priority, application Japan, Apr. 17, 1978, 53-45766; Oct. 13, 1978, 53-126378

Int. Cl.[3] **C07D** *279/163;* **A01N** *43/84*

U.S. Cl. 71—90 **7 Claims**

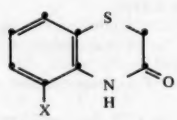
1. A compound of the formula (II)



(II)

wherein X is a bromine or fluorine atom.

7. A method for combating weeds which comprises applying a herbicidally effective amount of the compound of the formula (II),



(II)

wherein X is a halogen atom to the weeds.

4,268,302

METHOD OF PRODUCING ACICULAR METAL CRYSTALS

Robert J. Deffeyes, and Wesley R. Tyler, both of Arlington, Tex., assignors to Graham Magnetics Incorporated, North Richland Hills, Tex.

Division of Ser. No. 595,067, Jul. 11, 1975, Pat. No. 4,170,602, which is a division of Ser. No. 401,636, Sep. 28, 1973, Pat. No. 3,902,240. This application Jul. 2, 1979, Ser. No. 53,952

Int. Cl.[3] **B22F** *1/00*

U.S. Cl. 75—0.5 AA **4 Claims**

1. Metal oxide particles of ferromagnetic metal, said particles being formed of a process comprising the steps of

(a) reacting, in a solution containing an organic metal-complexing agent for at least one said metal, with an organic acid to form at least one soluble metal-complex compound

(b) initiating growth at organometallic salt crystals of said organic acid in the presence of said metal complex compound, said agent being incorporated in sufficient quantity to enhance an acicular the growth of salt crystals, and then

(c) decomposing said salt crystals to form said metal particles.

4,268,303

DIRECT REDUCTION PROCESS FOR PRODUCING REDUCED IRON

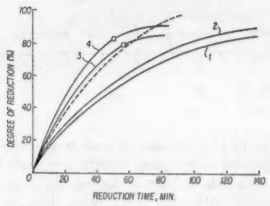
Dentaro Kaneko, Kobe; Mamoru Onoda, Miki; Yoshio Kimura, Akashi; Yutaka Inada, Yokohama, and Masahiro Tomita, Kobe, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Mar. 29, 1979, Ser. No. 25,100

Claims priority, application Japan, Apr. 10, 1978, 53/42439

Int. Cl.[2] **C21B** *13/02*

U.S. Cl. 75—34 **7 Claims**



1. A direct reduction process for producing reduced iron by reducing iron ores and/or pellets with reducing gases in a shaft furnace comprising the steps of:

(1) reducing the iron ores and/or pellets to a degree of reduction of 30–80% with a first reducing gas heated to a temperature of more than 950° C. in a first reduction zone, said first reducing gas containing 15–40% by volume of methane, and

(2) further reducing the iron ores and/or pellets thus reduced with a second reducing gas at a temperature below 1000° C. in a second reduction zone, said second reducing gas containing a high proportion of carbon monoxide and/or hydrogen and a proportion of methane between zero and a proportion which is less than the proportion which causes heavy carbon deposition within the burden or retardation of the rate of reduction.

4,268,304

DIRECT REDUCTION PROCESS IN A ROTARY KILN

Harry Serbent, Hanau; Friedrich Rosenstock, Frankfurt am Main, and Günter Kötzschke, Bruchköbel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 17, 1979, Ser. No. 58,353

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831827

Int. Cl.[3] **C21B** *13/00*

U.S. Cl. 75—36 **6 Claims**

1. In a process for directly reducing iron oxide-containing material to produce sponge iron in a rotary kiln by treatment with solid carbonaceous reducing agent having a high content of volatile combustile components, in which the charge is moved through the rotary kiln opposite to the direction of flow of the kiln atmosphere, oxygen-containing gases are blown at controlled rates through nozzle blocks into the charge disposed over nozzle blocks in the heating-up zone in that region thereof which begins with the occurrence of ignitable particles of the solid reducing agent and terminates before the reducing zone, and oxygen-containing gases are blown in at controlled rates through shell tubes into the free kiln space at least in that region, the improvement wherein at least a

portion of the solid carbonaceous reducing agent comprises disintegrated waste rubber.

4,268,305

PROCESS FOR TREATING LIQUID STEEL INTENDED IN PARTICULAR FOR MANUFACTURING MACHINE WIRE

Jacques Leclerc, Valenciennes; Rene Cormet, Herserange, and Guy Marcus, Mont-Saint-Martin, all of France, assignors to Union Siderurgique du Nord et de l'est de la France, Paris, France

Filed Mar. 29, 1978, Ser. No. 891,453
Claims priority, application France, Mar. 31, 1977, 77 09737
Int. Cl.[2] C21C *7/00*
U.S. Cl. 75—48 **6 Claims**

1. A process for the preparation of a steel which contains a minimum amount of oxidized inclusions and which exhibits improved wiredrawing properties comprising the steps of:

refining steel to produce an extra-mild steel;

adding sufficient manganese to a liquid mass of said refined steel to provide a steel containing greater than 0.3 percent by weight of manganese;

thereafter adding sufficient carbon to said liquid mass of steel to provide a steel containing greater than 0.2 percent by weight of carbon, said manganese and carbon being added in amounts sufficient to substantially deoxidize the steel; and

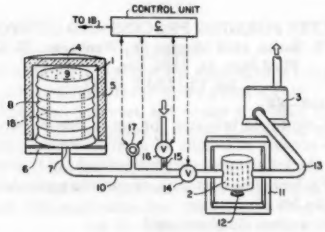
thereafter adding silicon and then aluminum to said liquid mass of steel in amounts sufficient to provide a composition of oxidized inclusions in the steel within the range of maximum plasticity defined by zone A of the FIGURE.

4,268,306

PROCESS FOR REMOVING MERCURY FROM SOLID WASTE MATERIAL

Karl-Ake G. Björkman, Karlskrona, Sweden, assignor to Lumalampan AB, Karlskrona, Sweden

Division of Ser. No. 58,278, Jul. 17, 1979, which is a continuation-in-part of Ser. No. 27,901, Apr. 6, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 123,971
Claims priority, application Sweden, Apr. 12, 1978, 7804104
Int. Cl.[3] C22B *43/00*
U.S. Cl. 75—81 **7 Claims**



1. A process for removing mercury from mercury-containing solid waste material comprising in combination

heating said mercury-containing solid waste material in a vacuum chamber to a temperature above the vaporization temperature of mercury,

lowering the pressure in said vacuum chamber to about 40 kPa, and then introducing an inert gas into said vacuum chamber and raising the pressure therein to a value which is not in excess of about 80 kPa, and

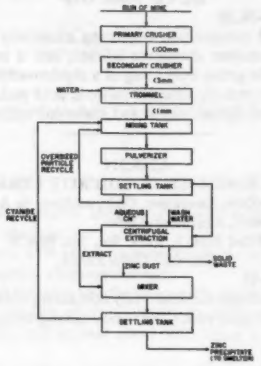
withdrawing mercury vapor from said chamber while at the same time decreasing the pressure therein to a value of about 40 kPa, followed by the introduction of said inert gas to raise the pressure up to a maximum of about 80 kPa, and repeating said sequence of mercury vapor withdrawal and addition of inert gas until the desired amount of mercury has been removed from said vacuum chamber.

4,268,307

METHOD OF EXTRACTION OF METALS FROM LOW GRADE ORES

Robert Michel, 9457 Las Vegas Blvd. South, #151, Las Vegas, Nev. 89119

Filed Nov. 8, 1979, Ser. No. 92,377
Int. Cl.[3] C22B *11/08*
U.S. Cl. 75—101 R **14 Claims**



1. A method for the recovery of metal from an ore containing a minor amount of said metal, comprises pulverizing the ore to a particle size of less than 5 microns, continuously contacting a slurry of pulverized particles with a liquid comprising a solvent for said metal to form a colloidal mixture having substantially all of the particles less than 5 microns in size, continuously centrifugally separating from the mixture a first product comprising a substantially solid-free liquid containing dissolved metal and a second product comprising pulverized ore, and processing said first product to recover metal.

4,268,308

DENTAL ALLOYS

Pei Sung, Lawrenceville; Irving Klaus, Highland Park, and James Lee-You, Cranbury, all of N.J., assignors to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 546,642, Feb. 3, 1975, abandoned, which is a continuation-in-part of Ser. No. 376,767, Jul. 5, 1973, abandoned. This application Sep. 13, 1976, Ser. No. 722,942
Int. Cl.[3] C22C *19/05*
U.S. Cl. 75—171 **4 Claims**

1. A alloy adapted for use in dental application consisting essentially of, on a weight percent basis, about 65 to 75% nickel, about 15 to 23.5% chromium, about 3.5 to 6% silicon, about 3 to 5% molybdenum, and about 0.2 to 2% boron, said alloy having a fusion temperature within the range of 2050° to 2350° F., a tensile strength of at least 90,000 p.s.i., and a coefficient of expansion in the range of from about 13.5×10^{-6} in/in/°C. to 13.8×10^{-6} in/in/°C.

4,268,309

WEAR-RESISTING SINTERED ALLOY

Yoichi Serino, Toyota; Tetsuya Suganuma, Nagoya, and Yoshitaka Takahashi, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 14, 1978, Ser. No. 960,637
Claims priority, application Japan, Jun. 23, 1978, 53-076107
Int. Cl.[3] B22F *5/00*
U.S. Cl. 75—230 **10 Claims**

1. A wear-resisting iron base sintered alloy comprising a

sintering of more than 7.3 g/cm^3 density, of a metal powder composed of Cr, 15–25%; Mo, 0–3%; Cu, 1–5%, P, 0.3–0.8%; and C, 2.0–4.0%; the balance being Fe and less than 2% impurities.

4,268,310

DENTAL COMPOSITIONS OF IMPROVED PROPERTIES

William R. Nemeth, Highland Heights, Ohio, assignor to Diamond Shamrock Corporation, Dallas, Tex.

Filed Apr. 28, 1980, Ser. No. 144,605
Int. Cl.^{3} B28B *7/34*
U.S. Cl. 106—38.35 **10 Claims**

1. A dental composition consisting essentially of calcined gypsum, magnesium aluminum silicate, and a surfactant selected from the group consisting of a condensation product of formaldehyde and naphthalene sulfonic acid and a condensation product of formaldehyde and melamine sulfonic acid.

4,268,311

HIGH STRENGTH CORDIERITE CERAMIC

Dennis M. VerDow, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Nov. 1, 1979, Ser. No. 90,470
Int. Cl.^{3} C04B *33/24*
U.S. Cl. 106—45 **12 Claims**

1. A high strength ceramic body containing cordierite as the predominant crystal phase, said body having an oxide analysis comprising:

SiO_2: 33–46 wt.%
Al_2O_3: 37–57 wt.%
MgO: 5.5–15 wt.%
ZnO: 0.4–1.7 wt.%
Na_2O+K_2O: 1.0–3.0 wt.%
ZrO_2: 0–5 wt.%

said oxides totalling at least 97% of the total,
said body being essentially free of Li_2O,
said body having a modulus of rupture greater than 10,000 psi and being suitable for glazing with a non-Li_2O containing glaze; the cordierite crystals developing as the predominant crystal phase in said body in a single firing, and the modulus of rupture being substantially higher and the percent absorption substantially lower than that of a ceramic body without ZnO and otherwise of the same composition.

4,268,312

OPTICAL GLASS

Kazufumi Ishibashi, Sagamihara, and Takeo Ichimura, Tokyo, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Oct. 9, 1979, Ser. No. 82,883
Claims priority, application Japan, Oct. 24, 1978, 53-129972
Int. Cl.^{3} C03C *3/14*
U.S. Cl. 106—47 Q **9 Claims**

1. A thorium free, high refractive index and low dispersion optical glass composition having a refractive index (nd) in the range of from 1.85 to 1.97 and an Abbe number (νd) in the range of from 28 to 38, said optical glass composition consisting essentially of, in percent by weight,:

B_2O_3	6–21
La_2O_3	27–50
ZrO_2	1–9
Ta_2O_5	1–31
WO_3	10–35
SiO_2	0–11
ZnO	0–3
Alkaline earth metal oxide	0–9
Al_2O_3	0–5
GeO_2	0–11
PbO	0–8

-continued

TiO_2	0–11
Nb_2O_5	0–4

4,268,313

SODIUM RESISTANT SEALING GLASSES

Dong-Sil Park, Clifton Park, and Louis Navias, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 21, 1980, Ser. No. 142,477
Int. Cl.^{3} C03C *3/08*
U.S. Cl. 106—54 **4 Claims**

1. Sodium resistant borosilicate sealing glasses consisting essentially of 36 to 50 weight percent silicon dioxide, 15 to 35 weight percent boron oxide, 5 to 20 weight percent alumina, 6 to 16 weight percent of mixtures of alkali oxides of 2 to 8 weight percent calcium oxide, 2 to 8 weight barium oxide, 2 to 8 weight percent strontium oxide, 2 to 6 weight percent sodium oxide, 0 to 4 weight percent lithium oxide, and 0 to 5 weight percent magnesium oxide.

4,268,314

HIGH DENSITY REFRACTORY COMPOSITES AND METHOD OF MAKING

Lionel C. Montgomery, Bay Village, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 21, 1979, Ser. No. 106,026
Int. Cl.^{3} C04C *35/58*
U.S. Cl. 106—65 **23 Claims**

1. In a method of processing a mixture consisting essentially of AlN, TiB_2 and BN powders by pressing and heating to form a high density sintered refractory composite, the improvement which consists of adding to said mixture at least 0.5 weight percent of nickel powder.

4,268,315

BRIQUETTE FORMING PROCESS AND COMPOSITION

Michael T. Burke, 1614 Monroe St., Waukegan, Ill. 60048

Filed Mar. 31, 1980, Ser. No. 135,515
Int. Cl.^{3} C04B *35/00*
U.S. Cl. 106—84 **15 Claims**

10. An improved briquette for use in heating wherein the briquette consists essentially of a predetermined quantity of sand and the following materials by weight of the sand:

5%–15% ball clay, bentonite, or suitable equivalent;
0.25% to 2% iron oxide;
3%–8% sodium aluminate; and
5%–12% sodium silicate.

4,268,316

MASONRY CEMENT COMPOSITION

Milton H. Wills, Jr., Catonsville, Md., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Jul. 27, 1979, Ser. No. 61,536
Int. Cl.^{3} C04B *7/02*
U.S. Cl. 106—97 **20 Claims**

12. A mixture consisting essentially of portland cement in an amount of from 25 to 55 percent by dry weight, cement kiln dust in an amount of from 25 to 65 percent by dry weight, and fly ash in an amount of from 10 to 25 percent by weight.

4,268,317

LIGHTWEIGHT INSULATING STRUCTURAL CONCRETE

Layton L. Rayl, 1865 S. State St., Salt Lake City, Utah 84115

Filed Dec. 22, 1978, Ser. No. 972,611
Int. Cl.[3] C04B *15/02*
U.S. Cl. 106—98 35 Claims

1. A hardened lightweight insulative cementitious product having a 28-day cure compressive strength of at least about 2500 psi a thermal resistance (R) value of at least about 2.5/inch and a density of less than about 110 pounds per cubic foot, said cementitious product comprising lightweight aggregates bonded together with a hydrated Portland cement, said lightweight aggregates comprising a lightweight fine aggregate having an amorphous SiO_2 content of at least about 75% by weight, a density of less than about 60 pounds per cubic foot, and from about 60 to about 85% by volume of void space.

4,268,318

ASPHALT AND EMULSIONS THEREOF FOR PAVEMENTS

Eugene M. Stone, Denver, Colo., assignor to Penelizer Corporation, Denver, Colo.

Filed Jul. 10, 1979, Ser. No. 56,347
Int. Cl.[3] C08L *95/00*
U.S. Cl. 106—277 14 Claims

1. In an asphalt base stock for pavements having the following properties: a penetration in the range of 25 to 50 (77° F.); a softening point below 150° F. and a ductility exceeding 100 cm., wherein said base stock is formed by blending an asphalt pitch and a hard base asphalt cement, the pitch being an asphalt with the general characteristics of a solvent refined asphalt having a penetration below 25 and the softening point is in the approximate range of 185° F. minus 3 times the penetration and the asphalt cement has a penetration between 60 and 300.

4,268,319

HIGH TEMPERATURE SOLAR ABSORBER COATING AND METHOD OF APPLYING SAME

Adolf H. Muenker, Somerset, and Archie R. Young, II, Montclair, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 882,438, Mar. 1, 1978, Pat. No. 4,211,210, which is a continuation-in-part of Ser. No. 764,851, Feb. 2, 1977, abandoned. This application Dec. 26, 1979, Ser. No. 107,363
Int. Cl.[3] C09D *5/32*
U.S. Cl. 106—288 B 7 Claims

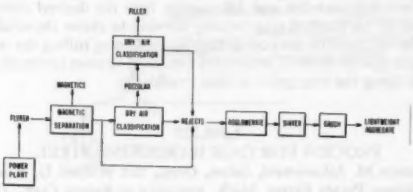
1. A composition capable of forming solar absorbing coating having a solar absorptance greater than 0.90 on solar absorbers for solar collectors of the type operable at temperatures above 550° F. comprising: an optical filler and a binder in the weight ratio ranging from about 1 to 1 to about 3 to 1, said optical filler having a particle size in the range of from about −100 mesh to about −325 mesh, said optical filler being an inorganic oxide which is thermally stable at operating temperatures above 550° F. and which has a solar absorptance greater than about 0.90 at wavelengths of from about 0.35 microns to about 3.0 microns, said inorganic oxide being selected from the group consisting of ferrites, oxides of nickel, cobalt, iron, molybdenum and strontium and mixtures thereof, said binder being an alkyl polysilicate.

4,268,320

PYROPLASTOID PARTICLES, COMPOSITION AND METHOD OF PRODUCTION

Richard M. Klingaman, Tonawanda, and Leo C. Ehrenreich, Amherst, both of N.Y., assignors to Penn Virginia Corporation, Philadelphia, Pa.

Continuation of Ser. No. 921,523, Jul. 3, 1978, abandoned, which is a continuation of Ser. No. 786,513, Apr. 11, 1977, abandoned. This application Feb. 29, 1980, Ser. No. 126,152
Int. Cl.[3] C04B *31/00*
U.S. Cl. 106—288 B 25 Claims



1. Particulate material, useful as a filler for polymeric media, composed of particles:

at least about 85% of which (number basis) have a well-defined, regular, ellipsoidal shape;

having a particle size less than about 25μ, with at least about 90% by weight of the particles having a size less than about 15μ, and at least about 50% being less than about 10μ,

the specific surface of the particles being in the range of about 0.75 to about 2.5 square meters per gram;

said particles having a specific gravity of about two to three, and

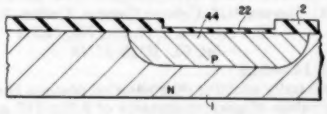
being composed substantially of alumino-silicate glass.

4,268,321

METHOD OF FABRICATING A SEMICONDUCTOR DEVICE HAVING CHANNEL STOPPERS

Satoshi Meguro, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1979, Ser. No. 69,062
Claims priority, application Japan, Aug. 23, 1978, 53/101791
Int. Cl.[3] H01L *21/26*
U.S. Cl. 148—1.5 16 Claims



14. A method of fabricating a semiconductor device comprising the steps of:

forming a semiconductor body including a semiconductor substrate, first and second films formed on the surface of said semiconductor substrate and spaced from each other, and a third film selectively formed on the portion of said surface of said semiconductor substrate between said first and second films;

introducing first impurities into the portion of said surface of said semiconductor substrate on which said first, second and third films are not formed; and

introducing second impurities to the portion of said surface of said semiconductor substrate between said first and second films.

4,268,322

STRESS RELIEF OF ALUMINIUM RINGS

Alan W. Willis, Hagley, England, assignor to Daniel Doncaster & Sons Limited, Wadsley Bridge, England

Filed Jul. 16, 1979, Ser. No. 58,033

Claims priority, application United Kingdom, Jul. 19, 1978, 30276/78

Int. Cl.³ C22F *1/04*

U.S. Cl. 148—12.7 A **11 Claims**

1. A continuous nonhydraulic stress-relieving process for the production of aluminium alloy rings, the process comprising ring rolling a hot ring blank of the aluminum alloy to a diametric size between 1% and 3% smaller than the desired dimensions of the finished ring, heating the ring to above the solidus point of the alloy, quenching the ring, cold ring rolling the ring to the desired dimension to relieve residual stresses in the alloy, and aging the ring prior to final machining.

4,268,323

PROCESS FOR CASE HARDENING STEEL

Thomas M. Jakubowski, Salem, Oreg., and William G. Wood, Grosse Pointe Farms, Mich., assignors to Kolene Corp., Detroit, Mich.

Continuation-in-part of Ser. No. 27,306, Apr. 5, 1979, abandoned. This application Jul. 1, 1980, Ser. No. 165,002

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—15.5 **11 Claims**

1. A process for forming a hardened case on a ferrous metal comprising the steps of maintaining, at a temperature from about 540° C. (1000° F.) to about 950° C. (1750°), a fused chemical salt bath consisting essentially of a first material selected from the group consisting of alkali halides, or alkaline earth halides, or mixtures thereof; and a second material selected from the group consisting of alkali oxides, alkaline earth oxides, alkali carbonates, alkaline earth carbonates, or mixtures thereof; said bath being maintained free of cyanide and cyanate salts, suspending the metal workpiece to be case hardened in said bath; thereafter adding to said bath a third material or combination of materials selected from the group consisting of urea, dicyanodiamide, and any of the pyrolysis/condensation products of urea or dicyanodiamide; or combinations thereof at a rate which will not produce cyanide or cyanate salts whereby to form in situ active case producing ingredients to thereby produce a case on said workpiece, removing said workpiece, and thereafter maintaining said bath free of cyanide and cyanate salts, with the original first and second material.

4,268,324

FABRICATION OF SPECTRALLY SELECTIVE SOLAR SURFACES BY THE THERMAL TREATMENT OF AUSTENITIC STAINLESS STEEL AISI 321

Vinod C. Sharma, B28, Ugbowo Campus, Uniben, Nigeria

Filed Apr. 20, 1979, Ser. No. 16,571

Int. Cl.³ B32B *15/18*

U.S. Cl. 148—31.5 **1 Claim**

1. Spectrally selective solar absorber coatings blue in colour having values of solar absorptance of 0.92 ± 0.02 and thermal emittance of 0.22 ± 0.02 are obtained by heating unpolished austenitic stainless steel AISI 321 at 843 for 10 to 20 minutes under normal atmospheric conditions; the type of selective coatings depending upon the combined effect of firing temperature and firing time.

4,268,325

MAGNETIC GLASSY METAL ALLOY SHEETS WITH IMPROVED SOFT MAGNETIC PROPERTIES

Robert C. O'Handley, Bedford Hills, N.Y., and Michael O. Sullivan, Bloomfield, N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jan. 22, 1979, Ser. No. 5,045

Int. Cl.³ C21D *1/04*

U.S. Cl. 148—108 **15 Claims**

1. In a method of annealing a magnetic glassy metal alloy sheet by heat treatment in a magnetic field, the improvement comprising applying a magnetic field of at least about 1,000 Oersteds at an elevated temperature ranging from above about 225° C. to below the glass transition temperature of said metal alloy in a direction substantially normal to the sheet surface to induce a magnetization inside the sheet essentially in said direction, whereby said alloy remains glassy after said annealing.

4,268,326

PROCESS FOR PRODUCING GRAIN ORIENTED ELECTRICAL SILICON STEEL SHEET

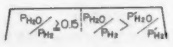
Kenzo Iwayama, Kitakyushu, and Osamu Tanaka, Nougata, both of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 11, 1979, Ser. No. 47,801

Claims priority, application Japan, Jun. 9, 1978, 53-69416

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—113 **6 Claims**



1. A process for producing a grain oriented electrical silicon steel sheet comprising: subjecting a cold-rolled silicon steel sheet, after it has been cold-rolled, to a continuous two-stage decarburization annealing procedure in an oxidation atmosphere, in an initial stage of which procedure a ratio of PH_2O/PH_2, wherein PH_2O represents the partial pressure of water vapor in said oxidation atmosphere and PH_2 represents the partial pressure of hydrogen in said oxidation atmosphere, is adjusted to a value of 0.15 or more, and a decarburization annealing temperature is adjusted to a value of from 750° through 880° C. and; in a final stage of said procedure the ratio of PH_2O/PH_2 is adjusted to a value smaller than that in said initial stage, and said decarburization annealing temperature is adjusted to a value of from 750° through 1200° C., the total decarburization annealing time for both stages being 200 seconds or less.

4,268,327

METHOD FOR GROWING SEMICONDUCTOR EPITAXIAL LAYERS

Tamotsu Uragaki, Osaka; Morio Inoue, Takatsuki; Susumu Koike, Kawachinagano, and Hitoo Iwasa, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 7, 1980, Ser. No. 109,915

Claims priority, application Japan, Jan. 17, 1979, 54-4381

Int. Cl.³ H01L *21/208*

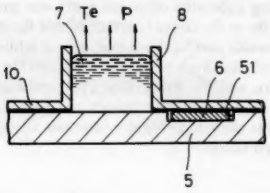
U.S. Cl. 148—171 **4 Claims**

1. A method of growing semiconductor epitaxial layers on a substrate in an enclosed space, said method comprising the successive steps of:

(a) forming a first epitaxial layer on said substrate by contacting a solution of a solvent, a solute and an impurity that determines the conductivity type with said semiconductor substrate for a predetermined period of time until a first epitaxial layer of the desired conductivity type is grown on said substrate;

(b) evacuating the space in which said semiconductor substrate and said solution are contained and removing at least a portion of said impurity from the solution of step (a); and thereafter

(c) forming a second epitaxial layer on the first epitaxial layer formed in step (a) by contacting the impurity-depleted solution from step (b) with the first-formed epitaxial



layer on said substrate for a predetermined period of time until a second epitaxial layer is formed on said first epitaxial layer.

4,268,328

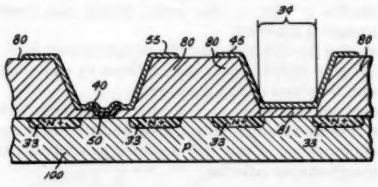
STRIPPED NITRIDE MOS/MNOS PROCESS

Yukun Hsia, Santa Ana, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Division of Ser. No. 898,649, Apr. 21, 1978. This application Jan. 25, 1980, Ser. No. 115,186

Int. Cl.³ H01L *21/22*

U.S. Cl. 148—187 **8 Claims**



1. A method for fabricating a semiconductor device to develop a plurality of discrete transistor elements on a common substrate by providing a body of silicon having a region of one conductivity type, diffusing regions of opposite conductivity type adjacent a gate region, providing a thin oxide layer over said gate region, providing a thick field oxide layer over the remainder of said silicon, layering silicon nitride over said oxide and providing contacts for said gate regions and said diffused regions wherein the improvement comprises: the additional step of stripping the silicon nitride from selected portions of the surface of the device such that the nitride remains on the surface of the device in a strip extending through the gate regions of a plurality of the transistor elements prior to fixing contacts thereon.

4,268,329

PROCESS FOR PREPARING A HERMETICALLY SEALED ASSEMBLY

James E. Jervis, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 943,196, Sep. 18, 1978, abandoned, which is a continuation of Ser. No. 717,695, Aug. 25, 1976, abandoned. This application Oct. 1, 1979, Ser. No. 80,544

Claims priority, application United Kingdom, Oct. 31, 1975, 45222/75

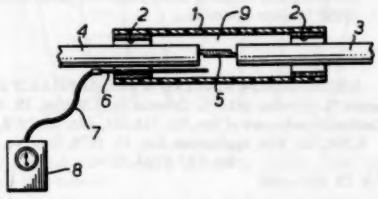
Int. Cl.³ H01B *13/06, 17/50*

U.S. Cl. 156—51 **13 Claims**

11. A process for preparing an assembly comprising a splice case which is hermetically sealed around a splice between pressurized cables, which process comprises:

bringing together around the splice a closure article comprising first and second members forming a generally tubular structure having a central cavity portion and with a rigid dimensionally stable container member positioned therein, the first member being heat-recoverable and the second member being non-heat-recoverable, the closure article being provided with means for maintaining said members together during heat recovery of said first member;

inserting between the first member and the substrate a probe connected to a detection device for detecting increased air pressure;



heating said structure to cause heat recovery of said first member and hermetic sealing of said first and second members to each other and to the pressurized cable; and

detecting the formation of the hermetic seal at the time of said formation via the detection device which detects increased air pressure in a space within said rigid container member which is open to the atmosphere before hermetic sealing has taken place but which becomes closed to the atmosphere when said hermetic sealing has taken place, the air in said space being heated by the heating of said structure.

4,268,330

GREEN TIRE BUILDING PROCESS AND APPARATUS

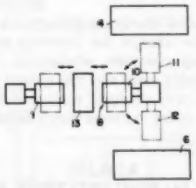
Tadaaki Komatsu, Kodaira; Yuusuke Araki, Higashimurayama, and Kanji Inoue, Higashiyamato, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 26, 1979, Ser. No. 106,727

Claims priority, application Japan, Dec. 29, 1978, 53-165170; Dec. 29, 1978, 53-165171; Dec. 29, 1978, 53-165172; Dec. 29, 1978, 53-165173

Int. Cl.³ B29H *17/20*

U.S. Cl. 156—111 **6 Claims**



1. A green tire building process, comprising: the steps of:

jointing both longitudinal ends of a belt-like tread rubber for producing an endless tread band which has a circumferential length substantially equal to a final circumferential length at a time when said endless tread band is to be assembled with a cylindrical green case having at least a carcass ply and a pair of beads embedded in both axial end portions of said carcass ply, and applying said endless tread band on an inner periphery of an annular face;

jointing both longitudinal ends of a belt-like breaker ply for producing an endless breaker band which has a circumferential length shorter than a final building circumferential length at a time when said endless breaker ply is to be applied on an inner periphery of said endless tread band,

and disposing said endless breaker band within said endless tread band with its mid-circumferential plane being aligned with that of said endless tread band;

expanding said endless breaker band radially to its final building circumferential length and applying said endless breaker band on the inner periphery of said endless tread band for building a tread breaker assembly;

disposing said cylindrical green case within and in coaxial relation with said tread breaker assembly;

deforming said cylindrical green case toroidally to be applied on the inner periphery of said endless breaker band for integrally building said cylindrical green case and said tread breaker assembly.

4,268,331

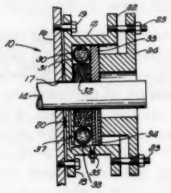
METHOD FOR MAKING A FLUID FILLED RING

James N. Stevens, 1811 N. Orleans St., Chicago, Ill. 60614

Continuation-in-part of Ser. No. 916,081, Jun. 16, 1978, Pat. No. 4,194,746. This application Jan. 19, 1979, Ser. No. 4,980

Int. Cl.[3] **F16J** *15/46*

U.S. Cl. 156—145 **6 Claims**



1. The method of fabricating a liquid filled bubble rings ring comprising the steps of:

(1) providing an elastomeric tube

(2) cooling a quantity of liquid to a first temperature for decreasing its volume,

(3) filling the tube with the quantity of cooled liquid at its decreased volume,

(4) confining the cooled liquid in the tube using clamps on the ends of the tube for defining a confined closed ended chamber entirely filled with the quantity of cooled liquid,

(5) increasing the temperature of the quantity of the cooled liquid from the first temperature to a second temperature for expanding the volume of the liquid thereby causing the tube to expand to accommodate the increased volume of the liquid according to the coefficient of expansion of the liquid,

(6) fusing the ends of the tube together with an adhesive, and

(7) removing the clamps for creating an enclosed non-obstructed ring chamber, whereupon the tube relaxes from its expanded state and the quantity of liquid flows into the previously clamped region of the ring chamber for filling the entire enclosed ring chamber.

4,268,332

METHOD OF MAKING PRECISION PARABOLIC REFLECTOR APPARATUS

Gordon R. Winders, Raleigh, N.C., assignor to Sun Trac Industries, Inc., Oak Ridge, Tenn.

Continuation-in-part of Ser. No. 904,226, May 8, 1978, abandoned, which is a division of Ser. No. 747,334, Dec. 3, 1976, abandoned. This application Nov. 26, 1979, Ser. No. 97,215

Int. Cl.[3] **B32B** *31/04;* **G02B** *5/10*

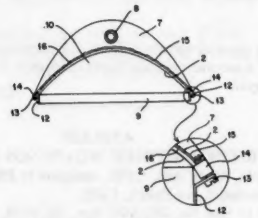
U.S. Cl. 156—160 **6 Claims**

1. A method of making trough-shaped high precision parabolic reflectors, comprising the steps of:

bending a sheet of inelastic flexible material over a precision parabolically contoured trough-shaped rigid, convex mold fixture;

forcing said sheet of material into continuous and intimate contact with said mold fixture to tension said sheet of inelastic flexible material at the edges thereof which are parallel to the focal axis of said mold fixture, thereby conforming said sheet into a high precision parbolically curved trough-shape;

centering a plurality of spaced apart, non-precision, reinforcing ribs to the convex surface of said flexible material with a flowable and hard-curable cement while it is so bent and forced into high precision conformality with said mold fixture, said ribs being affixed perpendicularly to said focal axis of said parabolic trough and perpendicularly to said convex surface at regular intervals along the axis of said trough shape;



curing said cement whereby the intersticies between said non-precision support ribs and the back surface of said precision formed sheet of flexible material are intimately bonded together and completely filled by the said hard-curable cement so that even, strong and continuous contact is achieved;

removing the resulting parabolic trough-shaped sheet, maintained in high precision configuration by said reinforcing ribs, from said mold fixture; and

providing the concave precision curved parabolic surface of said sheet with light reflective capability, thus completing the formation of said high precision parabolically curved trough-shaped reflector.

4,268,333

PROCESS OF MAKING HIGHLY ADHESIVE PLASTIC TOP COATINGS ON METALLIC SUBSTRATES

Hans G. Schwarz, Weimarerstrasse 8, 6940 Weinheim-Waid, Fed. Rep. of Germany

Filed Dec. 15, 1978, Ser. No. 969,941

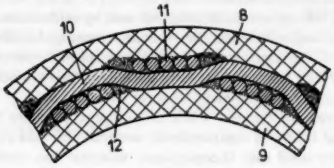
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835401

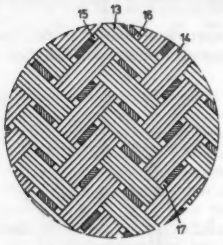
Int. Cl.[3] **B32B** *81/00;* **B29C** *25/00, 19/00;* **B31C** *39/00*

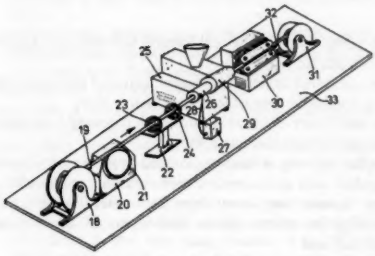
U.S. Cl. 156—161 **9 Claims**

1. A process of making highly adhesive plastic top coatings of polyurethane on metallic substrates of braided wire layers having openings as a pressure substrate, having an inner core of thermoplastic plastic, surrounded by said substrate, characterized in that said substrate having openings is prestressed mechanically by a braking device and then heated to approximately the temperature of the extrudate of an extruder head so that there is generated in the inner core a radially directed prestress which forces at least part of the material thereof, while softening, through the openings in said substrate, thereafter creating a vacuum around said substrate, extruding said plastic top coating onto said substrate from the extruder head,

so that simultaneously with, or immediately after, the creation of said vacuum said top coating fuses intimately with and







bonds together with the material of said inner core that passes through said openings in said substrate.

4,268,334

PIPE WRAPPING ADHESIVE TAPE METHOD

George M. Harris, Bolton, and Samuel J. Thomas, Hamilton, both of Mass., assignors to The Kendall Company, Walpole, Mass.

Filed Oct. 31, 1979, Ser. No. 90,000
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—187 **7 Claims**

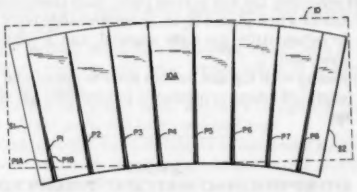
1. In the method of coating steel pipe by wrapping it with a tape comprising a polyolefin backing and an adhesive layer comprising a blend of virgin butyl rubber with reclaimed butyl rubber and a tackifying agent, the procedure for increasing the strength of the adhesive bond which comprises incorporating in the adhesive layer a cross-linking agent selected from the group consisting of (A) 0.15 to 1.0% by weight of p-dinitrosobenzene, (B) 1.0 to 2.5% by weight of p-quinonedioxime, and (C) a mixture of (A) and (B) based on the total weight of said adhesive layer, together with an activator.

4,268,335

TWO-PIECE PLEATED FOAM CUP

David H. Herbst, Reisterstown, Md., assignor to Maryland Cup Corporation, Owings Mills, Md.

Filed Jul. 13, 1976, Ser. No. 704,940
Int. Cl.³ B31F *00/00*; B65D *3/00*
U.S. Cl. 156—218 **7 Claims**



1. The method of forming a two-piece plastic foam cup comprising the steps of:

providing a rectangular blank of plastic foam sheet material;

forming a plurality of pairs of divergent pleat lines across the width dimension of said blank;

overlapping one pleat line with the other to form triangular double layers in said blank, thereby constraining said blank to assume an arcuate shape;

overlapping the opposite edges of said blank in a side seam configuration to form a multi-sided, substantially frusto-conical cup sidewall assembly;

placing said sidewall assembly in a conforming mold means;

providing a bottom blank in said mold means at one end of said sidewall assembly; and

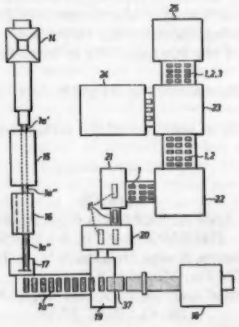
applying heat thereto to fuse said overlapping areas and heat seal said side seam configuration and said bottom blank to said sidewall assembly to provide a unitary cup structure.

4,268,336

METHOD OF MANUFACTURING CONTAINERS

Lars-Eric Piltz, Dalby; Bo T. Quist, Bjärred; Folke Kiellarson, Barsebäck; Siwer Mansson, Lund, and Bengt Nilsson, Södra Sandby, all of Sweden, assignors to AB Akerlund & Rausing, Sweden

Division of Ser. No. 721,866, Sep. 9, 1976. This application Apr. 2, 1979, Ser. No. 25,766
Claims priority, application Sweden, Sep. 12, 1975, 7510169; Sep. 12, 1975, 7510170
Int. Cl.³ B29D *23/04*
U.S. Cl. 156—244.13 **8 Claims**



1. A method for manufacturing a gas-tight package comprising the steps of:

(a) extruding a round seamless tube of plastic;

(b) reshaping the round tube into a desired cross-section;

(c) exposing the outside of the tube to an outer vacuum simultaneously with the step of reshaping;
(d) lubricating and cooling the tube with water;
(e) laminating a layer of metallic substantially gas-tight material to the outside of said tube;
(f) laminating a plastic layer to the layer of metallic material;
(g) cutting the laminated tube into pieces of predetermined lengths;
(h) providing top and bottom parts, each comprising a laminate of a first plastic layer, an intermediate layer of metallic substantially gas-tight material, and a second plastic layer; and,
(i) joining such top and bottom parts to one of said cross-cut lengths of tubing to produce a substantially gas-tight package.

4,268,337

SHEET MOLDING MATERIAL PRODUCED BY ASSOCIATING A LAYER COMPRISING A PHOTOPOLYMERIZABLE MATERIAL WITH LAYERS COMPRISING THERMOSETTING RESINS

Jyoji Ibata, Fuki; Hisaaki Fukui, Nobeoka; Takeo Yuasa, and Michio Katoh, both of Fuji, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 936,551, Aug. 24, 1978, Pat. No. 4,214,026. This application Nov. 9, 1979, Ser. No. 93,095
Int. Cl.[3] B29D *7/02, 7/20;* **B32B** *31/20, 31/28*
U.S. Cl. 156—244.17 **10 Claims**

1. A process for continuously producing a sheet molding material comprising (1) an interlayer containing a photopolymerizable resin and a photocuring agent for the photopolymerizable resin and (2) a surface layer of a thermosetting resin containing a heat curing agent for the thermosetting resin on both surfaces of the interlayer (1), which comprises

extruding a composition containing a photopolymerizable resin and a photocuring agent for the polymerizable resin as the interlayer (1) using an extruder and a sheet die,

adhering a surface layer of a thermosetting resin containing a heat curing agent for the thermosetting resin to both surfaces of the interlayer (1) to form surface layers (2) thereon, and irradiating the assembly with light to cure the interlayer (1).

6. A process for continuously producing a metal-clad laminate comprising (1) an interlayer containing a photopolymerizable resin and a photocuring agent for the photopolymerizable resin, (2) a surface layer of a thermosetting resin containing a heat curing agent for the thermosetting resin on both surfaces of the interlayer (1), and (3) a metal layer on one surface layer (2), which process comprises

extruding a composition containing a photopolymerizable resin and a photocuring agent for the photopolymerizable resin as the interlayer (1) using an extruder and a sheet die,

adhering a surface layer of a thermosetting resin containing a heat curing agent for the thermosetting resin to both surfaces of the interlayer (1) to form surface layers (2) thereon,

irradiating the assembly with light to cure the interlayer (1), and

laminating on at least one of the surface layers (2) a metal layer (3).

4,268,338

METHOD AND APPARATUS FOR RF SEALING OF THERMOPLASTIC LAYERS

Everett A. Peterson, Roslyn Heights, N.Y., assignor to Peterson Electronic Die Co., Mineola, N.Y.

Filed Aug. 20, 1979, Ser. No. 67,738
Int. Cl.[3] B29C *27/04*
U.S. Cl. 156—251 **24 Claims**

1. A method of bonding layers of thermoplastic material to one another to form a seal comprising the steps of,

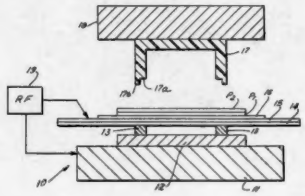
pressing said layers of thermoplastic material against an electrode plate, supporting said electrode plate on a conductive electrode die, separating said electrode plate and electrode die by a thin sheet of dielectric material, said conductive die having a configuration to define the shape of the seal formed between said layers;

applying an RF current to a circuit formed by said electrode plate and said electrode die, thereby causing localized heating of the portions of said thermoplastic material overlying said electrode die until said thermoplastic material has softened sufficiently to form the seal; and

removing said RF current while maintaining pressure between said layers of thermoplastic material and said electrode plate until said thermoplastic material has cooled sufficiently to set.

23. Apparatus for bonding two or more layers of thermoplastic material to one another to form a seal therebetween comprising,

upper and lower superposed conductive electrode dies having generally complementary configuration in plan to define the shape of the seal formed between said layers of thermoplastic material;



upper and lower sheets of dielectric material each supported on a respective one of said conductive dies;

upper and lower electrode plates each disposed on a respective one of said dielectric sheets;

means for moving at least one of said upper and lower dies, together with its respective dielectric sheet and electrode plate toward and away from the other for selectively pressing the sheets against said layers of thermoplastic material; and

means for applying an RF current to a circuit formed by said upper electrode die and electrode plate and to a circuit formed by said lower electrode die and electrode plate, so that sufficient localized heat is formed in the portions of said dielectric sheets overlying the respective dies to cause said thermoplastic material to soften sufficiently to form a seal.

4,268,339

PROCESS FOR RADIATION CURED CONTINUOUS LAMINATES

Raymond C. Urban, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 17, 1979, Ser. No. 58,248
Int. Cl.[3] B05D *3/06*
U.S. Cl. 156—272 **1 Claim**

1. A method of making a continuous laminate comprising providing a continuous layer of a radiation curable substrate selected from the group consisting of polyethylene, ethylene/-propylene/diene rubber, and polypropylene, said substrate including a layer of stiffener selected from the group consisting of glass cloth, glass mat and glass paper and a continuous layer of copper foil, forming said substrate, said layer of stiffener and said foil into a sandwich, and continuously passing said sandwich through radiation from a radiation source selected from the group consisting of electrons, X-rays and ultraviolet rays.

4,268,340

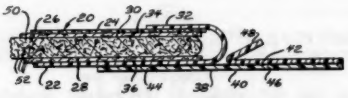
METHOD OF FORMING AN ABSORBENT ARTICLE

Harry G. Fitzgerald, Green Bay, Wis., and Donald Patience, Barrington, Ill., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 841,091, Oct. 11, 1977, abandoned, which is a continuation of Ser. No. 669,423, Mar. 23, 1976, abandoned, which is a division of Ser. No. 603,071, Aug. 5, 1973, Pat. No. 3,976,074. This application Mar. 7, 1979, Ser. No. 18,179

Int. Cl.³ D04H *1/04*

U.S. Cl. 156—296 **10 Claims**



1. The method of making a disposable absorbent pad comprising the steps of:

collecting a quantity of raw materials including both hydrophilic and hydrophobic materials, said hydrophobic materials being at least in part thermoplastic sheet material;

simultaneously comminuting said raw materials together to provide a mixture of non-fibrous hydrophobic particles and hydrophilic fibers;

forming said mixture of particles and fibers into a fibrous web comprising a mass of said hydrophilic fibers and a matrix of said non-fibrous hydrophobic particles dispersed throughout said web in interfiber spaces defined by said fibers;

simultaneously heating and compressing said web to fuse said hydrophobic particles to said hydrophilic fibers without completely destroying said particles;

winding said web into a feed roll;

providing a second feed roll containing compressed hydrophilic materials;

unwinding webs from said first and said second feed rolls;

simultaneously comminuting portions of said webs into a fibrous mass; and,

forming said fibrous mass into sections as pads,

said unwinding and simultaneous comminuting being controlled such that said pads include 1 to 15 percent by weight said non-fibrous hydrophobic particles and 85 to 99 percent by weight said hydrophilic fibers.

4,268,341

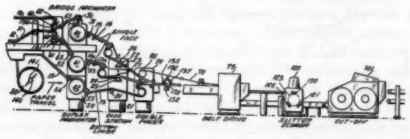
ZERO WASTE ORDER CHANGE SYSTEM FOR A CORRUGATOR

Paul Huhne, Amsterdam, Netherlands, assignor to S&S Corrugated Paper Machinery Co. Inc., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 886,941, Mar. 15, 1978, abandoned. This application Jul. 12, 1978, Ser. No. 923,714

Int. Cl.³ B32B *31/00*; B31F *1/20*; B26D *5/20*; B32B *31/18*

U.S. Cl. 156—353 **11 Claims**



1. In a corrugating machine having means for moving and combining a plurality of webs including at least a web for forming an outer liner and a web for forming a currugated medium, rotary drive means in said corrugator for converting said last mentioned web into a corrugated medium and means for applying and securing said currugated medium to said web for forming an outer liner; a supply roll for each web and a heated table for receiving said combined webs; said rotary means moving said combined web onto said heated table; and a continuous belt in engagement with said combined web on said heated table along said heated table; the surface of said table engaged by said combined web having a transverse gap adjacent the section of the table first engaged by said combined web;

a knife member operable transversely in said gap and brake members for said rotary drive means and said supply rolls for each web;

said knife member being located outside of the path of said combined web on said table while said web is moving along said table;

means for operating said brake members to halt the movement of said webs and said combined web;

and means operable, upon operation of said brake members, to move said knife member in said gap across said table and combined web to sever said combined web.

4,268,342

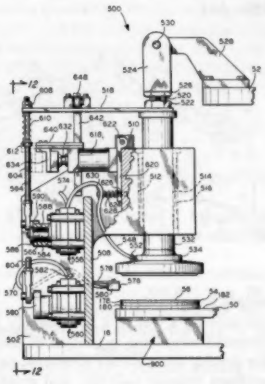
APPARATUS FOR ASSEMBLING CLOSURES AND CONTROL SYSTEMS THEREFOR

Jerry W. Young, Weston, Mo., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 6, 1979, Ser. No. 55,247

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—357 **32 Claims**



1. In an apparatus for assembling closures, each closure including a generally cylindrically shaped ring and a generally circular disc, said apparatus being of the type which includes a plate having an upper surface and a plurality of ring receiving means on the upper surface equally spaced along a circle on said plate and each adapted for receiving one of said rings thereon; plate drive means operatively related to said plate for rotating said plate about an axis of rotation concentric with the circle along which said ring receiving means are equally spaced; ring feed means positioned adjacent said plate for sequentially positioning said rings on respective ones of said ring receiving means as said plate is rotated past said ring feed means; disc feed means positioned adjacent said plate for sequentially positioning said discs within respective ones of said rings on said ring receiving means as said plate is rotated past said disc feed means; adhesive dispensing means positioned adjacent said plate for dispensing a quantity of adhesive within respective ones of said rings on said ring receiving means as said plate is rotated past said adhesive dispensing means; lubricant dispensing means positioned adjacent said plate for dispensing a quantity of lubricant on respective ones of said rings on said ring receiving means as said plate is rotated past said lubricant dispensing means; and ejecting means positioned

adjacent said plate for ejecting respective ones of said closures assembled by said apparatus from said ring receiving means as said plate is rotated past said ejecting means, a control system comprising:

first ring sensing means positioned intermediate said ring feed means and said disc feed means for sensing the presence of one of said rings on one of said ring receiving means passing thereby and providing a signal indicating the presence of said ring on said ring receiving means; and

means responsive to said signal from said first ring sensing means and operatively related to said disc feed means for automatically allowing the positioning of one of said discs by said disc feed means within one of the open ends of said ring sensed by said first ring sensing means, and, alternately, in the absence of said signal from said first ring sensing means, preventing action by said ring feed means to position one of said discs on one of said ring receiving means not having one of said rings thereon.

4,268,343

MACHINE FOR WORKING ON A WEB OF MATERIAL BY MEANS OF A WELDING TOOL

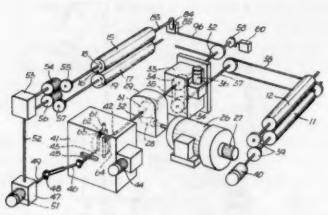
Ehrhart Schulze, Fellbach, Fed. Rep. of Germany, assignor to Karl Heinz Stiegler, Stuttgart, Fed. Rep. of Germany

Filed Feb. 23, 1979, Ser. No. 14,317

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810127; Mar. 9, 1978, 2810204

Int. Cl.³ B32B *31/00*

U.S. Cl. 156—361 **21 Claims**



1. Apparatus comprising:

means for moving a web at a substantially uniform speed;

a tool disposed transverse to motion of said web;

means for driving said tool in a rotational path at a cyclically non-uniform angular velocity, said rotational path being effective to contact said web with said tool once per rotational cycle thereof; and

control means for controlling said substantially uniform speed to a speed substantially equal to a speed of said tool when said tool contacts said web.

4,268,344

METHOD AND APPARATUS FOR COUPON INSERTION

Elwyn D. Jones, Kingston, Canada, assignor to Glopak Industries Limited, Montreal, Canada

Filed Aug. 20, 1979, Ser. No. 68,064

Int. Cl.³ B32B *31/00, 3/00, 31/04*; B65C *9/40*

U.S. Cl. 156—383 **3 Claims**

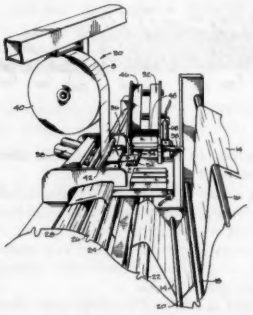
1. Apparatus for positioning and securing coupons intermittently and sequentially on a travelling web of plastic sheet bag material which is subsequently folded and sealed to form a bag comprising at least first and second rollers supporting the web of bag material for movement in one direction,

and a supply roll of plastic cover strip material for travelling overlay of the bag material with coupons intermittently positioned therebetween,

the strip material passing around a third roller positioned above the first roller to overlay the cover strip material, the bag material and the overlaid strip material then together passing around the second roller,

the third roller being mounted for movement between a raised position spaced above the first roller to a lowered position bringing the travelling strip material into contact with the travelling bag material,

and a supply magazine for coupons and a coupon transfer assembly for transferring single coupons sequentially from the magazine to a position where a leading edge of a coupon is between the first roller and the third roller when the latter roller is in its raised position, and means to lower the third roller to its lowered position where the



leading edge of the coupon is engaged between the travelling webs and the coupon is carried along therebetween and around the second roller,

and heat sealing means for sealing the strip material to the bag material with the coupons positioned therebetween during travel around the second roller, the heat sealing means comprising sealing heads having heated air discharge nozzles positioned adjacent the second roller, the heated air sealing the bag material and overlaid cover strip material together along parallel lines of securement, two of the lines of securement being adjacent and parallel to side edges of the cover strip.

4,268,345

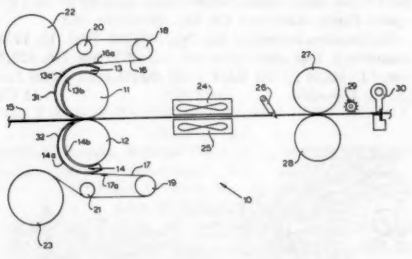
CONTINUOUS LAMINATING SYSTEM

Mario E. Semchuck, Buffalo Grove, Ill., assignor to General Binding Corporation, Northbrook, Ill.

Filed Oct. 18, 1979, Ser. No. 86,153

Int. Cl.³ B30B *15/34*

U.S. Cl. 156—499 **10 Claims**



1. A continuous laminating system, comprising: a pair of rotating laminating rollers in contact to form a laminating nip through which a product to be laminated is fed; a pair of driven pull rollers spaced downstream from the laminating rollers and also forming a nip; a pair of laminating film supply rollers each supplying a continuous strip of laminating film positioned through the nip of the laminating rollers rearwardly to and

through the nip of the pull rollers; a heating member adjacent each laminating roller and having a concave inner surface adjacent to and having a surface curvature corresponding to a peripheral portion of the respective laminating roller, and a convex heating surface over which the respective laminating film slides prior to entering the nip formed by the laminating rollers; and a layer of Teflon-coated fiberglass covering at least all portions of the convex heating surface directly over which the laminating film would otherwise slide whereby scratching of the laminating film is reduced, squealing caused by movement of the laminating film over the heating member is prevented, and effective heat transfer is maintained.

4,268,346

APPARATUS FOR MAKING TANK TOP BAGS FROM A WEB OF TUBULAR PLASTICS FILM PROVIDED WITH SIDE FOLDS

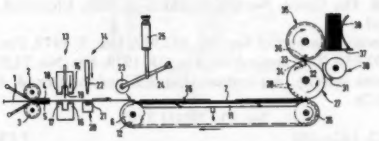
Fritz Achelpohl, Lengerich of Westphalia, Fed. Rep. of Germany, assignor to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Jul. 24, 1979, Ser. No. 60,204

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833232

Int. Cl.[3] **B31B** *1/86, 21/14, 21/16*

U.S. Cl. 156—510 **8 Claims**



1. Apparatus for making tank top bags from an intermittently fed web of tubular plastics film provided with side folds, comprising: cyclically operating transverse welding and separating means for severing tube sections from an intermittently fed web and for forming weld seams at both ends of the severed tube sections; first conveyor means for taking the tube sections away from said welding and separating means; and stamping means for cutting out tank top cut-outs from the welded tube sections, said first conveyor means comprising a suction belt conveyor means (**7**) comprising at least one belt (**8, 9, 10**) provided with a first plurality of suction holes (**30'**) spaced apart by a larger distance than the length of the severed tube sections (**29**), direction-changing drum means (**6**) for changing the conveying direction of said suction belt conveyor means disposed at and encompassed within a receiving end of the suction belt conveyor means (**7**), said direction-changing drum means being provided with a suction channel for providing the suction holes of said suction belt conveyor means with suction air, a raisable and lowerable pressure roller (**23**) positioned above said direction-changing drum means, drive means (**25**) for moving said pressure roller towards said direction-changing drum means (**6**) as suction holes pass said direction-changing drum means, jaw means (**20, 21, 22**) provided on both sides of a feeding plane of the tubular web (**1**) for clamping a severed tube section (**29**) upstream of the direction-changing drum means (**6**) and for releasing the clamped severed section when the pressure roller (**23**) is lowered; suction drum means (**27**) rotatably mounted above a delivery end of said suction belt conveyor means having a second plurality of suction holes at the same spacing along its circumference as the spacing between suction holes in said at least one belt (**8, 9, 10**), the second plurality of suction holes (**28**) suction-attracting leading edges of tube sections for taking attracted tube sections from the suction belt conveyor means (**7**), said stamping means comprising means movable towards and cooperating with said suction drum means (**27**) for cutting out tank top cut-outs (**43**) from said tube sections; said suction drum means (**27**) carrying projectable folding blade means (**32**) for transferring the tank top bags; means for controlling movement of said blade means; and second conveyor means (**35**) for receiving transferred tank top bags and for conveying received bags away from said suction drum means.

4,268,347

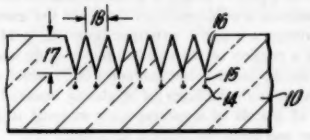
LOW REFLECTIVITY SURFACE FORMED BY PARTICLE TRACK ETCHING

Richard B. Stephens, New Providence, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jan. 26, 1979, Ser. No. 6,549

Int. Cl.[3] **B44C** *1/22;* **C03C** *15/00, 25/06;* **B29C** *17/08*

U.S. Cl. 156—628 **7 Claims**



1. A process for forming a surface having a low reflectivity to incident radiation in a wavelength region whose lower and upper bounds are defined by λ min about equal to 0.1 micron and λ max about equal to 2.0 microns respectively, which comprises (a) bombarding a dielectric material with high energy particles, thereby generating damage tracks, and (b) etching said damage tracks to form cavities of average depth D and average spacing S such that λ min is greater than about 10S and λ max is less than about 6D whereby incident radiation transits a gradient change in dielectric constant, substantially reducing the reflectivity of said surface.

4,268,348

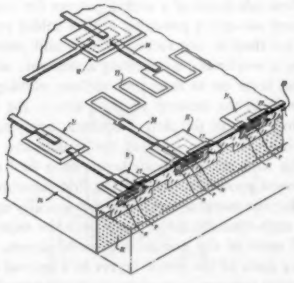
METHOD FOR MAKING SEMICONDUCTOR STRUCTURE

David F. Allison, Palo Alto, and David A. Maxwell, San Jose, both of Calif., assignors to Signetics Corporation, Sunnyvale, Calif.

Division of Ser. No. 391,704, Aug. 24, 1964, abandoned, which is a continuation-in-part of Ser. No. 338,802, Jan. 20, 1964, abandoned, which is a continuation-in-part of Ser. No. 330,697, Dec. 16, 1963, abandoned. This application Aug. 1, 1966, Ser. No. 569,368

Int. Cl.[3] **H01L** *21/22, 21/304, 21/308*

U.S. Cl. 156—645 **23 Claims**



1. In a method for forming a semiconductor structure utilizing a semiconductor body, forming a grid structure in the semiconductor body, forming a support structure upon the grid structure, removing only a portion of the semiconductor body to provide a semiconductor body which has a substantially uniform thickness in the vicinity of the grid structure and

in which the grid structure does not intercept the exposed surface of the semiconductor body, and forming additional grid structure in the semiconductor body joining the first named grid structure so that islands of semiconductor material are formed in the semiconductor body which are isolated from each other and from the support structure.

23. In a method for forming a semiconductor structure utilizing a semiconductor body having a surface, forming a layer of insulating material on the surface of the semiconductor body, forming a recessed grid in the layer of insulating material and extending into the semiconductor body, forming a layer of insulating material on the recessed grid adhering to said surface and having a depth which is insufficient to fill the recessed grid to form a grid structure in a semiconductor body prior to the formation of a semiconductor device in the semiconductor body, forming a support structure upon the grid structure, removing a portion of the semiconductor body and diffusing isolation fences into the semiconductor body which extend and make contact with the layer of insulating material to form a plurality of islands of semiconductor material isolated from each other and from the support structure.

4,268,349

PROCESS FOR THE PRODUCTION OF PRINTED CIRCUITS WITH SOLDER REJECTING SUB-ZONES

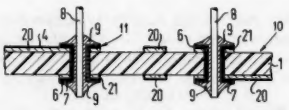
Hans-Juergen Hacke, and Hans Hadersbeck, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1976, Ser. No. 723,582

Claims priority, application Fed. Rep. of Germany, Sep. 16, 1975, 2541280

Int. Cl.[3] **H05K** *3/06*

U.S. Cl. 156—656 **4 Claims**



1. In a process for the production of a printed circuit board having first sub-zones of a wiring pattern for receiving solder and second sub-zones provided with a solder rejecting property so that they do not receive solder, said process including providing a workpiece comprising a substrate with a conductive metal layer on at least one surface, etching each of the layers to form the desired wiring pattern, the improvement comprising prior to the step of etching, applying a positively acting photo layer on each of the conductive metal layers, subjecting each of the photo layers to a first exposure and development process to expose the first sub-zones of each of the conductive metal layers, then galvanically applying a solderable, etch-resistant metal layer onto the exposed first sub-zones of each of the conductive metal layers, subsequently subjecting each of the photo layers to a second exposure and development process to produce an etching mask of a pattern of the second sub-zones on each of the conductive metal layers, and subsequent to the etching step, removing each of the etching masks from the second sub-zones and dipping the workpiece in an aqueous solution of liver of sulfur to form a passivation layer with a solder rejection property on each of exposed second sub-zones without impairing the solderability of the etch-resistant metal layer of the first sub-zone.

4,268,350

METHOD OF TREATING PULP BLEACHING EFFLUENTS

Inge G. Månsson, Kungälv, Sweden, assignor to EKA Aktiebolag, Surte, Sweden

Filed Sep. 18, 1979, Ser. No. 76,745

Claims priority, application Sweden, Oct. 25, 1978, 7811089

Int. Cl.[3] **D21C** *11/00*

U.S. Cl. 162—29 **9 Claims**

1. A method of cleaning effluents from pulp bleaching plants, containing high molecular weight organic chlorine compounds, comprising ultrafiltering the effluent to produce a permeate and a concentrate containing high molecular weight chlorine compounds, contacting the concentrate with alkali to split a portion of the high molecular weight chlorine compounds in the concentrate into phenols and alkali chloride, and again ultrafiltering the alkali-treated material.

4,268,351

MODIFIED UREA FORMALDEHYDE RESIN FIBER PAPER

Richard G. C. Henbest, and Kenneth McGregor, both of Norton Hall, The Green, Norton, Stockton-on-Tees, Cleveland, England

Continuation-in-part of Ser. No. 857,972, Dec. 5, 1977, Pat. No. 4,202,959. This application Aug. 31, 1979, Ser. No. 71,570

Claims priority, application United Kingdom, Dec. 8, 1976, 51199/76

Int. Cl.[3] **D21H** *5/12*

U.S. Cl. 162—146 **7 Claims**

1. A wet-laid paper in which at least 1% by weight of the fibrous constituents comprise urea-formaldehyde resin fibres made from a modified urea-formaldehyde resin, alone or in admixture with an unmodified urea-formaldehyde resin, said modified urea-formaldehyde resin being made by reacting urea and formaldehyde in the presence of a source of inorganic oxyacid radicals selected from the group consisting of sulphite, phosphate, phosphite, and borate radicals, the amount of said source being such that there are 0.2 to 15 of said inorganic oxyacid radicals per 100 methylene radicals in said urea-formaldehyde resin fibres.

4,268,352

METHOD OF REDUCING SOLUBLE STARCH IN BROKE REPULPING USING A DUAL POLYMER COMBINATION

David R. Cosper, Downers Grove, and Patricia R. Soll, Buffalo Grove, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation of Ser. No. 886,490, Mar. 14, 1978, abandoned. This application May 30, 1979, Ser. No. 44,669

Int. Cl.[3] **D21F** *1/82*

U.S. Cl. 162—191 **6 Claims**

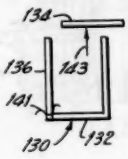
1. A method of increasing the amount of retention of deposited starch and pigment on fibers in broke liquid which consists of adding to said liquid a combination dosage of a dimethylamine-epichlorohydrin polymer together with a second polymer selected from a group consisting of copolymers of acrylamide with (1) acrylic acid, (2) sodium acrylate, (3) dimethylamino ethyl methacrylate quaternary salt wherein the dosage to broke liquid is 0.96–16.8 lbs/ton of the dimethylamine epichlorohydrin polymer together with 0.14–2.24 lbs/ton of acrylamide copolymer, both dosages being based on dry weight of starch.

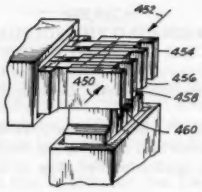
4,268,353

DEMOUNTABLE EXTERNALLY ANCHORED LOW-STRESS MAGNET SYSTEM AND RELATED METHOD

James Powell, Wading River; Shih-Yung Hsieh, Centereach, both of N.Y., and John R. Lehner, Rocky Hill, Conn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 23, 1978, Ser. No. 880,680
Int. Cl.³ G21B *1/00*
U.S. Cl. 176—3 **43 Claims**





20. A nuclear fusion reactor comprising means for containing plasma, including blanket and shield means in toroidal form, a plurality of superconducting coils radially disposed relative to and engaged with said blanket and shield means, each of said coils further comprising:

(a) at least two coil segments, said segments each further comprising a plurality of parallel conducting elements including end portions in a spaced relation one to the other, said spaced end portions of adjacent segments being interdigitated to provide electrical connections between said conducting elements of said adjacent segments so that said conducting elements form a helix;

(b) means for demountably connecting said interdigitated end portions of said adjacent segments to form conducting joints enabling facile assembly and disassembly of said coil segments, whereby installation, replacement, repair and maintenance are facilitated;

(c) external means for supporting said coil segments and said joints to prevent stresses in said coil from exceeding the level at which said coil would revert to a state of normal conductivity, said support means and said connecting means being constructed to enable relative motion between said support means and said interdigitated end portions, said support means being attached to the joined coil segments at a predetermined plurality of locations around the perimeter of said coil.

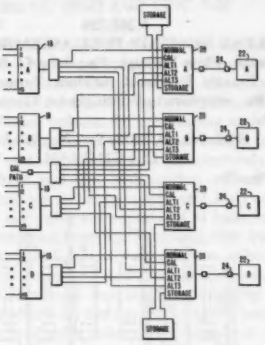
4,268,354

NUCLEAR REACTOR IN CORE FLUX MAPPING SYSTEM

William W. Wassel, Trafford, and Gilbert W. Remley, Sharpsburg, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 12, 1978, Ser. No. 950,651
Int. Cl.³ G21C *17/00*
U.S. Cl. 176—19 EC **12 Claims**

1. An improved nuclear reactor flux mapping system including a plurality of neutron detectors operable to be driven into and out of the reactor core along any one of a number of pre-established paths wherein the improvement comprises the detectors, corresponding drives and drive controllers being arranged into at least two physically separate and functionally independent channels, each channel respectively arranged to scan complementary paths through the core and at least two redundant, functionally independent and physically separate



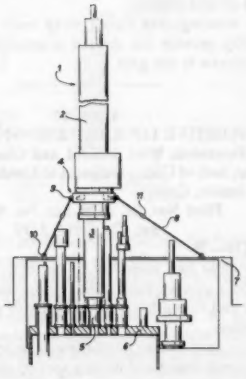
"command and processing" channels each independently, redundantly, alternatively operable to automatically sequence the detector scans and process the detector output data on all of the detector channels while being electrically buffered from each detector channel in a manner to prevent faults on any of the detector channels from disabling either command and processing channel.

4,268,355

PARASEISMIC DEVICE FOR THE HANDLING HOOD OF A NUCLEAR REACTOR

Jacqui Buret, Saulx-Les-Chartreux, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Aug. 28, 1978, Ser. No. 937,610
Claims priority, application France, Sep. 8, 1977, 77 27189
Int. Cl.³ G21C *19/20*
U.S. Cl. 176—30 **7 Claims**



1. A paraseismic device for a handling hood of a nuclear reactor, comprising an enclosure with a vertical axis connected to a lock communicating with a passage provided in a slab located in the upper part of the reactor, an elastic connecting device having an annular shape, mounted on the enclosure and the lock and permitting the enclosure to perform a gimballing movement around a centre located on the vertical axis of the

lock, and a plurality of regulatable tension tie attachment means located between the connecting device and the slab and regularly distributed around the vertical axis, said means each having an attachment point on the connecting device disposed in the vicinity of a horizontal plane passing through the centre of the connecting device.

4,268,356

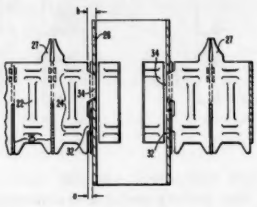
NUCLEAR REACTOR FUEL ASSEMBLY GRID

Stanley Kmonk, Plum Borough, Pa.; John L. Alder, Pocatello, Id., and Francis R. Racki, O'Hara Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 14, 1978, Ser. No. 924,542

Int. Cl.[3] G21C *3/34*

U.S. Cl. 176—78 **5 Claims**



1. A grid for a nuclear reactor fuel assembly comprising:

a multiplicity of interleaved straps which form a grid of egg-crate configuration having multiple cells therein;

at least two intersecting and transversely extending straps in said grid being interrupted along their length to provide a space equal to four cells;

at least one control rod guide thimble sleeve of a size sufficient to fit in said space;

means accurately positioning said sleeve in said space in the grid and orienting it in a direction such that the axis of said sleeve lies in a plane parallel to said straps;

said means including tabs on the facing ends of at least one of said straps which has been interrupted along its length to provide the space for said sleeve, said tabs being located on opposite sides of said sleeve and extending through the wall of transversely extending straps and into opposite sides of said sleeve;

means securing said facing strap ends to said sleeves to thereby provide the desired orientation and direction of said sleeve in the grid.

4,268,357

POSITIVE LOCK HOLDDOWN DEVICE

Frank J. Formanek, West Suffield, and Glen E. Schukei, South Windsor, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 24, 1978, Ser. No. 963,625

Int. Cl.[3] G21C *3/30*

U.S. Cl. 176—78 **13 Claims**

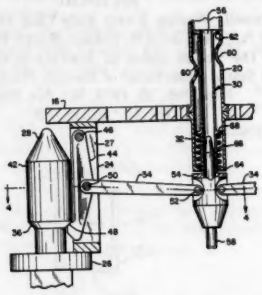
1. A nuclear fuel assembly to be locked into first mating surfaces on a core support stand, comprising:

a lower end fitting having a plurality of posts for resting on the stand;

elongated latch means pivotally connected at one end to the lower end fitting and having second mating surface at the other end adapted to engage the first mating surface;

actuating means located between two of the posts and being vertically movable relative to the end fitting; and

rigid link means pivotally attached at one end to the latch means intermediate the connection of the latch means to the end fitting and the second mating surface and pivotally attached at the other end to the actuating means thereby forming a toggle mechanism, the link means having a length between the pivoted connections such that the second mating surface on the latch locks into engagement



with the first mating surface on the stand as the link pivots approach the horizontal.

4,268,358

METHOD OF REDUCING THE SULFUR CONTENT OF COAL REDUCED TO DUST

Ernst Schuster, Gummersbach, Fed. Rep. of Germany, assignor to L. & C. Steinmüller GmbH, Gummersbach, Fed. Rep. of Germany

Continuation of Ser. No. 866,479, Jan. 3, 1978, abandoned. This application Sep. 26, 1979, Ser. No. 79,093

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1976, 2659752

Int. Cl.[3] C01B *53/04;* C10L *9/08;* C10B *57/00*

U.S. Cl. 201—9 **1 Claim**

1. The method for desulfurizing coal, comprising:

(a) grinding coal and screening to coal dust of particle size of less than 0.1 mm in diameter;

(b) preoxidizing said coal dust with oxygen-containing gas for a period of one to four seconds and at a temperature of 350° to 450° C.;

(c) introducing the preoxidized coal dust granules axially into a reaction chamber with a carrier gas; and

(d) treating said coal dust granules for a period of from one to six seconds while raising the temperature thereof to a range of 700° to 1100° C. by introducing heated hydrogen containing gas containing no more than 0.3% hydrogen sulfide into said chamber tangentially from at least two locations on the periphery of said reaction chamber and in the direction of flow of said coal dust to produce desulfurized coke granules ten times the original size of the coal dust particles fed.

4,268,359

METHOD FOR COOLING DUSTLIKE OR FINE-GRAINED SOLIDS

Roland Rammler, Königstein; Ingo Dreher, Oberursel, and Rainer Rudisch, Bruchköbel, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jan. 29, 1979, Ser. No. 7,441

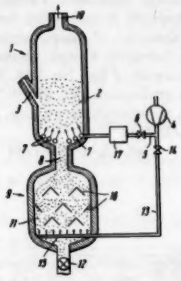
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1978, 2805244

Int. Cl.[3] C10B *49/10, 39/00*

U.S. Cl. 201—31 **11 Claims**

1. A method of cooling hot, dustlike or fine-grained reaction residue having a particle size below 5 mm and emanating from a reactor which method comprises passing said reaction residue in the form of a pile of bulk material downwardly through at least one cooling shaft, maintaining a pressure in said reactor and said cooling shaft of 20 to 200 bars, passing upwardly through said cooling shaft in counter-current flow to said

reaction residue a cooling gas and conducting said cooling gas into said reactor, the velocity of said counter-current flow of



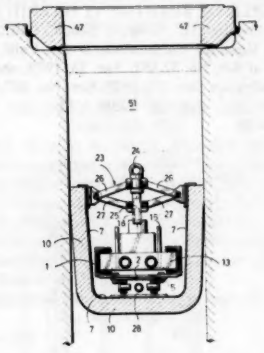
gas being insufficient to fluidize said residue in said cooling shaft.

4,268,360

TEMPORARY HEAT-PROOF APPARATUS FOR USE IN REPAIRING COKE OVENS

Akira Tsuzuki, Yokohama, and Hiroshi Tobitani, Kukisaki, both of Japan, assignors to Koritsu Machine Industrial Limited, Tokyo, Japan

Filed Mar. 3, 1980, Ser. No. 126,884
Int. Cl.³ C10B *25/00, 45/00*
U.S. Cl. 202—270 **14 Claims**



1. Heat-proofing apparatus for use in repairing a coke oven gate or the vicinity thereof, which comprises:

a heat-proofing unit including;

a vertical adiabatic member of substantially "C" shaped cross-section having a rear wall and two side walls, and receivable within a coke oven chamber through a gate opening;

vertical frame means positioned within the adiabatic member and fastened thereto;

means for expanding said side walls outwardly adjacent the front ends thereof to pressure-contact the sides of a coke oven chamber; and

upper and lower adiabatic members mounted to said frame means;

whereby the coke oven chamber can be substantially sealed off at a point to the rear of the gate opening during repair work in the vicinity of the opening, insulating said vicinity from the hot air within the chamber.

4,268,361

INHIBITING POLYMERIZATION IN EXTRACTIVE DISTILLATION OF C-4 HYDROCARBONS USING ALKOXYNITRILE-CONTAINING SOLVENT

Pradeep V. Patel, Parma, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 19, 1980, Ser. No. 150,848
Int. Cl.³ B01D *3/40;* C07C *7/08*
U.S. Cl. 203—9 **7 Claims**

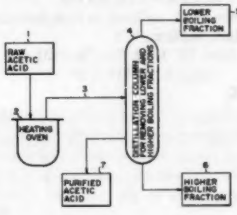
4. In an extractive distillation process for separating butadiene-1,3 from a C-4 hydrocarbon stream containing C-4 hydrocarbons more saturated than butadiene-1,3 which process includes the steps of (a) introducing a selective solvent to an extractive distillation column (b) introducing said C-4 hydrocarbon stream to said column at a point below the point of introduction of said selective solvent (c) selectively extracting butadiene-1,3 from said C-4 hydrocarbon stream to form a liquid solvent fraction richer in butadiene-1,3 (d) withdrawing overhead from said column a vaporous C-4 hydrocarbon fraction richer in hydrocarbons less saturated than butadiene-1,3 (e) withdrawing said liquid solvent fraction richer in butadiene-1,3 from the bottom of said column (f) introducing said withdrawn liquid solvent fraction to a stripping column to remove said butadiene-1,3 and (g) recycling the lean solvent to said extractive distillation column, and in which process the selective solvent contains from 50 to 90 weight percent of an alkoxynitrile of the structure R_1—O—R_2—CN wherein R_1 is an alkyl and R_2 is an alkylene group each containing from 1 to 3 carbon atoms, the improvement which consists of including in the selective solvent composition a combination of 0.05 to 0.5 percent by weight of 2,4 dinitrophenol and 0.05 to 0.5 percent by weight of phosphoric acid.

4,268,362

METHOD FOR PURIFYING ACETIC ACID

Tetsuya Ogawa, Futsushi; Norio Yoshizaki, Ichiharashi; Tadakatsu Katsuragi, Ichiharashi; Makoto Nakamura, Ichiharashi, and Kiyonori Shiiba, Ichiharashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Dec. 28, 1976, Ser. No. 754,911
Claims priority, application Japan, Dec. 29, 1975, 50-155982
Int. Cl.³ B01D *3/00;* C07C *51/44*
U.S. Cl. 203—28 **6 Claims**



1. The method for substantially reducing the formaldehyde content of concentrated acetic acid which comprises

(a) feeding a solution containing at least 95% raw acetic acid obtained from a synthetic reaction and having a formaldehyde content substantially greater than 30 ppm into a heating zone, said synthetic reaction being selected from the group consisting of the oxidation of acetaldehyde, the oxidation of butane, and oxidation of naphtha and the reaction of methanol with carbon monoxide,

(b) maintaining said raw acetic acid in said heating zone at a temperature at about the boiling point of the acetic acid or higher,

(c) removing the heated product from step (b) and delivering it to a distillation zone, and

(d) operating said distillation zone so as to obtain

(1) a lower boiling fraction,

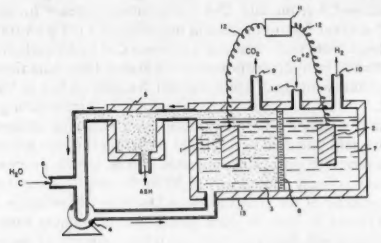
(2) a higher boiling fraction; and
(3) an intermediate acetic acid fraction that has a boiling point intermediate said lower and higher boiling fractions, said intermediate acetic acid fraction having a formaldehyde content of 30 ppm or lower.

4,268,363

METHOD FOR ELECTROWINNING METALS

Robert W. Coughlin, 49 Storrs Heights Rd., Storrs, Conn. 06268

Continuation-in-part of Ser. No. 840,567, Oct. 11, 1977. This application Aug. 20, 1979, Ser. No. 67,769
Int. Cl.³ C25B *1/00, 1/08, 1/12*
U.S. Cl. 204—39 **18 Claims**



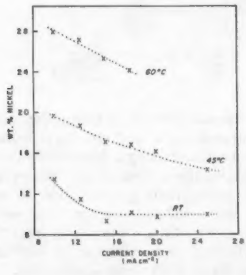
1. A method of electrowinning a metallic element from an electrolyte containing a metallic component as a cationic component, comprising the steps of:
introducing carbonaceous solids and said electrolyte into an electrolysis cell having a cathode electrode and an anode electrode; and
applying an electromotive force across said electrodes;
whereby said carbonaceous solids react at said anode and said metallic component is deposited at said cathode.

4,268,364

NICKEL-ZINC ALLOY DEPOSITION FROM A SULFAMATE BATH

Dale E. Hall, Monroe, N.Y., assignor to Inco Research & Development Center Inc., Suffern, N.Y.

Filed Mar. 18, 1980, Ser. No. 131,448
Int. Cl.³ C25D *3/56*
U.S. Cl. 204—43 Z **8 Claims**



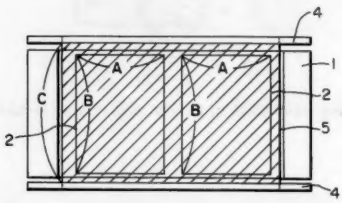
5. An electroplating bath for electrodepositing nickel-zinc alloy containing about 50 to 60 gpl of divalent nickel added as the sulfamate, about 5 to about 14 gpl of zinc added as the sulfate, about 20 to 35 gpl of boric acid with the balance being essentially water and free acid sufficient to adjust the pH of the plating bath to within the range of 2.5 to 4.0.

4,268,365

METHOD OF ELECTROLYSIS OF AN ALKALI METAL CHLORIDE

Tokuzo Iijima, Kobe; Toshiharu Yamamoto, Akashi; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 944,790, Sep. 22, 1978, abandoned. This application Oct. 30, 1978, Ser. No. 955,793
Claims priority, application Japan, Sep. 22, 1977, 52/114107; Dec. 26, 1977, 52/159732
Int. Cl.³ C25B *1/34*
U.S. Cl. 204—98 **9 Claims**



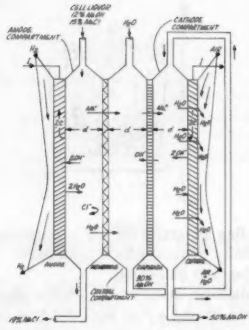
1. In a method of electrolysis of alkali metal chloride using a cation exchange membrane, the improvement which comprises positioning the cation exchange membrane intermediate the anode and cathode in such a way that the respective surfaces of both the anode and the cathode are in intimate contact with the cation exchange membrane.

4,268,366

METHOD OF CONCENTRATING ALKALI HYDROXIDE IN THREE COMPARTMENT HYBRID CELLS

Bogdan M. Broniewski, Newport Beach, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 32,151, Apr. 23, 1979, abandoned. This application Dec. 27, 1979, Ser. No. 107,688
Int. Cl.³ C25B *1/35*
U.S. Cl. 204—98 **27 Claims**



1. A process for the production of alkali metal hydroxide and electrical energy which comprises:
(a) introducing flow of an aqueous solution of at least one alkali metal hydroxide as anolyte to an anode compartment of at least one hybrid cell, the hybrid cell comprising a gas diffusion type anode having first and second surfaces, a membrane selectively permeable to cations and having first and second surfaces, a diaphragm permeable to cations and anions and having first and second surfaces, and a gas diffusion type cathode having first and second surfaces, the first surface of said anode and the first surface of said membrane defining said anode compartment, a

central compartment defined by the second surface of said membrane, opposite said first membrane surface, and the first surface of said diaphragm, and a cathode compartment defined by the first surface of said gas diffusion type cathode and the second surface of said diaphragm, opposite said first diaphragm surface; the anode, central and cathode compartments each having an inlet and an outlet, said anolyte flowing from the inlet to the outlet of said anode compartment, the outlet of said central compartment being in flow communication with the inlet of said cathode compartment;

(b) introducing flow of an aqueous fluid medium receptive to alkali metal ions as catholyte into the inlet of said central compartment;

(c) withdrawing flow of the catholyte from said central compartment outlet;

(d) introducing flow of the catholyte withdrawn from the central compartment into the inlet of the cathode compartment;

(e) passing a flow of current through an external load between said gas diffusion type cathode and said gas diffusion type anode, said current generated by oxidation of hydrogen supplied to the second surface of said gas diffusion type anode and generation of hydroxide ion by reduction of an oxygen-containing gas supplied to the second surface of said gas diffusion type cathode, said current flow causing said alkali metal ions to selectively pass from the flowing anolyte through said membrane to the catholyte flowing through said central and cathode compartments to form a catholyte more concentrated in alkali metal hydroxide solution than the aqueous fluid medium introduced to said central compartment;

(f) withdrawing catholyte from the outlet of said cathode compartment; and

(g) withdrawing from the outlet of said anode compartment anolyte depleted in alkali metal ions.

4,268,367

ELECTROLYTIC PROCESS FOR THE STERILIZATION OF LIQUIDS

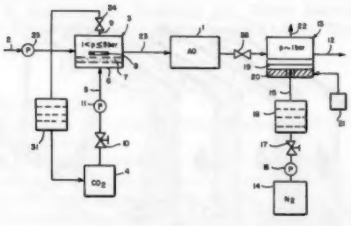
August K. Reis, Munich; Norbert L. Kirmaier, Aschheim; Helmut Determann, Starnberg; Joachim Thiery, Mannheim; Rolf Haker, Frankenthal, and Dietrich Krüger, Schriesheim, all of Fed. Rep. of Germany, assignors to Institut fur Biomedizinische Technik, Munich, Fed. Rep. of Germany

PCT No. PCT/DE78/00024, § 371 Date May 11, 1979, § 102(e) Date May 11, 1979, PCT Pub. No. WO79/00145, PCT Pub. Date Mar. 22, 1979.

This PCT application filed May 11, 1979, Ser. No. 51,625

Int. Cl.³ C02F *1/46*

U.S. Cl. 204—149 **5 Claims**



1. Process for the sterilisation of liquids having a very low conductivity by means of anodic oxidation, characterised in that a gas which increases the conductivity of the liquid is fed thereto and the anodic oxidation is then carried out.

4,268,368

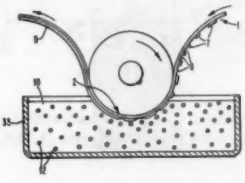
ELECTROPHORETICAL METHOD FOR SELECTIVELY REINKING RESISTIVE RIBBON THERMAL TRANSFER PRINTING RIBBONS

Ari Aviram, Yorktown Heights; Keith S. Pennington, Somers, both of N.Y., and Lawrence Kuhn, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,152

Int. Cl.³ C25D *13/06, 13/16*

U.S. Cl. 204—181 C **10 Claims**



1. A method for selectively reinking a resistive ribbon thermal transfer printing ribbon, comprising:

(1) positioning a used resistive ribbon thermal transfer printing ribbon in a colloidal dispersion of electrophoretically depositable ink, prepared by

(a) heating a water-insoluble polymeric binder having a melting point in the range of 85° C. to 100° C. until the polymeric binder has been melted to a liquid state,

(b) adding and blending a pigment into the melted polymeric binder,

(c) adding and mixing a heated dilute aqueous solution of a carboxylic acid to the composition formed in (b), to adjust the pH and

(d) adding and blending a colloid charge-forming compound to the pH adjusted composition formed in (c), to form an aqueous dispersion of electrically-charged pigment-containing polymeric colloid,

(e) cooling the colloidal dispersion formed in (d); and

(2) passing an electric current through said colloidal dispersion, with an electrically conductive layer of said ribbon serving as one electrode, to electrophoretically deposit the pigment-containing polymeric colloid on areas of said ribbon that have been depleted of ink, to form an ink layer of uniform thickness.

4,268,369

PROCESS OF MAKING SILICON DIOXIDE FILMS FOR USE AS WEAR RESISTANT COATINGS IN VIDEO AND DIGITAL MAGNETIC RECORDING

Malcolm Barlow, Sunnyvale, and Jerry R. Lundquist, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Division of Ser. No. 817,004, Jul. 18, 1977. This application Aug. 30, 1979, Ser. No. 71,269

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 D **1 Claim**

1. The process of making a wear resistant magnetic recording medium comprising the following steps:

a. providing a metallic, non-magnetic substrate,

b. forming a metal magnetic film selected from cobalt-nickel, cobalt and cobalt-nickel-phosphorus over said substrate,

c. oxidizing said magnetic film to provide a graded surface thereon by heating said metallic magnetic film in air at a temperature of from 100°–200° C. to form an oxidized interface layer over said metallic magnetic layer and,

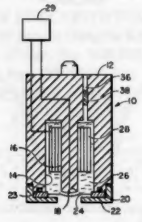
c. sputtering a film having a thickness of 1–20 microinches of silicon dioxide over the oxydized surface of said magnetic film.

4,268,370

HIGH TEMPERATURE, CO_2 INTERFERENCE FREE, ELECTROCHEMICAL O_2 SENSOR

Radhakrishna M. Neti, Brea, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jan. 11, 1980, Ser. No. 111,404
Int. Cl.[3] G01N 27/46
U.S. Cl. 204—195 P 35 Claims



1. In an electrochemical sensor for determining the oxygen content of a fluid of the type comprising an electrode body forming a reservoir therein and having an opening at one end thereof, a cathode and anode mounted within said body, said cathode and anode being electrically connected by an electrolyte within said reservoir, a gas permeable membrane extending across said one end of said body and separating said cathode and anode and said electrolyte from a sample to be analyzed, the improvement comprising:

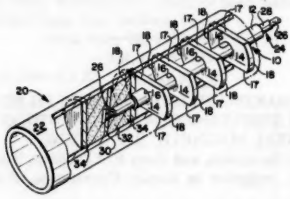
said electrolyte being selected from a group consisting of amino alcohols having from 2 to 12 carbon atoms, morpholine, and mixtures thereof.

4,268,371

CABLE GUIDE FOR A TUBULAR ANODE

Bernard T. Brun, Dayton, and John W. McKinney, Jr., Xenia, both of Ohio, assignors to The Duriron Company, Inc., Dayton, Ohio

Filed Mar. 13, 1980, Ser. No. 129,950
Int. Cl.[3] C23F 13/00
U.S. Cl. 204—196 3 Claims



1. An improved tubular anode of the type having a tubular anode body including an interior wall which defines a hollow cavity, a contact plate packed in a mastic and sealed by caps within a portion of the cavity, and a cable joined to the contact plate, the improvement comprising:

a conduit enclosing and hermetically sealing the cable and having an outside diameter less than the diameter of the cavity; and

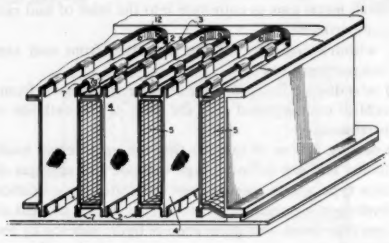
a plurality of spacers sized to fit in abutting relationship with the interior wall of the anode and shaped to form an open space with the interior wall to permit the escape of gases from the cavity, the spacers removably mounted along the conduit at spaced apart locations such that the conduit cannot be deflected to contact the interior wall.

4,268,372

METHOD AND APPARATUS FOR INSTALLING A MEMBRANE TO AN ELECTROLYTIC CELL

Tokuzo Iizima, Kobe; Yasushi Samejima, Kakagawa; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago, and Toshiji Kano, Kobe, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 20, 1978, Ser. No. 971,429
Claims priority, application Japan, Aug. 3, 1978, 53-107197[U]
Int. Cl.[3] C25B 9/00
U.S. Cl. 204—252 23 Claims



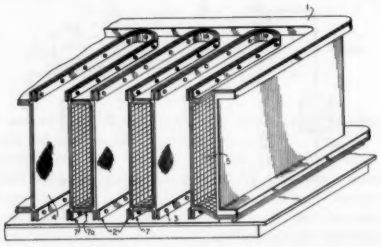
1. Method of installation of a membrane to a finger type electrolytic cell for the production of chlorine, hydrogen and an alkali metal hydroxide by electrolysis of an aqueous alkali metal chloride solution which cell comprises a plurality of anodes and a cathode box providing a cathode between adjacent anodes, and a membrane between adjacent anodes and cathodes, which comprises covering the upper and lower horizontal surfaces of the cathode not opposing the anodes with upper and lower membrane installation frames having collars; positioning cation exchange membranes in a cylindrical shape substantially parallel to the vertical surfaces of said cathodes; and installing and securing the membranes to the collars by clipping.

4,268,373

METHOD AND APPARATUS FOR INSTALLATION OF A MEMBRANE TO AN ELECTROLYTIC CELL

Tokuzo Iijima, Kobe; Toshiharu Yamamoto, Akashi; Kazuo Kishimoto; Takamichi Komabashiri, both of Takasago; Toshiji Kano, Kobe, and Akinori Hisanaga, Kakogawa, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 20, 1978, Ser. No. 971,430
Claims priority, application Japan, Dec. 26, 1977, 52/178714[U]
Int. Cl.[3] C25B 9/00
U.S. Cl. 204—252 25 Claims



1. Method of installation of a membrane to a finger type electrolytic cell for the production of chlorine, hydrogen and an alkali metal hydroxide by electrolysis of an aqueous alkali

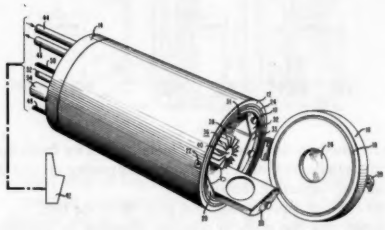
metal chloride solution which cell comprises a plurality of anodes and a cathode box providing a cathode between adjacent anodes, and a membrane between adjacent anodes and cathodes, which comprises covering the upper and lower horizontal surfaces of the cathode not opposing the anodes with upper and lower membrane installation frames having collars; positioning cation exchange membranes in a cylindrical shape substantially parallel to the vertical surfaces of said cathodes, and installing and securing the membranes to the collars by bolting.

4,268,374

HIGH CAPACITY SPUTTER-ETCHING APPARATUS

Martin P. Lepselter, Summit, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Aug. 9, 1979, Ser. No. 65,185
Int. Cl.³ C23C 15/00
U.S. Cl. 204—298 **8 Claims**



2. Apparatus for simultaneously etching multiple workpieces, comprising

a cylindrical cathode element,

a large-surface-area anode element centrally positioned within said cathode element,

small-surface-area means for mounting multiple workpieces to be etched on the inner surface of said cathode element, the anode element-to-mounting means surface area ratio being in the range 1.5 to 10,

means for establishing a specified gaseous atmosphere within said apparatus in the space between said anode and cathode elements,

means connected to said cathode element for capacitively coupling a-c potential thereto,

and means for connecting said anode element to a point of reference potential,

whereby, in response to a-c excitation of said apparatus, a dark space is established in the immediate vicinity of said mounting means and a plasma is established between said dark space and said anode element.

4,268,375

SEQUENTIAL THERMAL CRACKING PROCESS

Axel R. Johnson, 657 Benjamin Rd., North Babylon, N.Y. 11703, and Herman N. Woebcke, 41 Quaker Riadge Rd., Stamford, Conn. 06903

Filed Oct. 5, 1979, Ser. No. 82,049
Int. Cl.³ C10G 9/16, 9/30
U.S. Cl. 208—72 **13 Claims**

1. A process for cracking hydrocarbon feed to produce olefins comprising:

a. delivering hydrocarbon feed to a first zone;

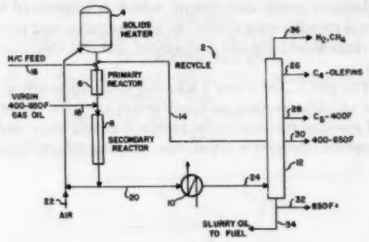
b. thermally cracking the hydrocarbons in the first zone at temperatures above 1,500° F.;

c. discharging the cracked effluent from the first zone to a second zone;

d. delivering a second hydrocarbon feed to the entry of the second zone; and

e. mixing the cracked effluent from the first zone and the second hydrocarbon feed in the second zone;

whereby the cracked effluent from the first zone is quenched and the second hydrocarbon feed is cracked at low severity in the second zone at a residence time of the hydrocarbon between 150 and 2,000 milliseconds, a hydrocarbon temperature of 1,200° to 1,500° F. and a pressure of 10 to 100 psig.



4,268,376

CRACKING CATALYST REJUVENATION

Michael S. Foster, Oakland, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 23, 1979, Ser. No. 23,483
Int. Cl.³ C10G 11/05
U.S. Cl. 208—120 **4 Claims**

1. A process for cracking hydrocarbons comprising:

(a) circulating between a cracking zone and a catalyst regeneration zone a particulate solid cracking catalyst comprising an acidic zeolitic crystalline aluminosilicate having a faujasite crystal structure;

(b) cracking hydrocarbons in contact with said catalyst and depositing coke on said catalyst in said cracking zone at cracking conditions including the absence of added hydrogen and burning coke from said catalyst with molecular oxygen in said regeneration zone at catalyst regeneration conditions, whereby the cracking activity of said catalyst is decreased;

(c) increasing the cracking activity of particles of said catalyst by contacting said particles with an aqueous liquid containing cations of at least one rare earth metal at ion-exchange conditions, said liquid having a pH of less than 7; and

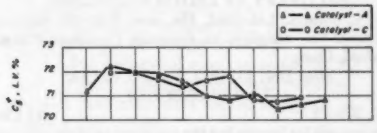
(d) contacting the resulting catalyst particles with hydrocarbons at catalytic cracking conditions including the absence of added hydrogen.

4,268,377

HYDROCARBON CONVERSION WITH AN ACTIVATED MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 848,699, Nov. 4, 1977, Pat. No. 4,183,804. This application Oct. 5, 1979, Ser. No. 82,436
The portion of the term of this patent subsequent to Jan. 15, 1997, has been disclosed.
Int. Cl.³ C10G 35/08
U.S. Cl. 208—139 **20 Claims**



1. A process for converting a hydrocarbon which comprises contacting said hydrocarbon at hydrocarbon conversion conditions with a catalytic composite comprising the pyrolyzed

reaction product of a catalytically effective amount of a ruthenium carbonyl component with a porous carrier material containing a uniform dispersion of catalytically effective amounts of a platinum group component, which is maintained in the elemental metallic state during the incorporation and pyrolysis of the ruthenium carbonyl component, and of a rhenium component.

18. The process of claim 1 wherein said hydrocarbon comprises a gasoline fraction, said conversion comprises reforming of said gasoline fraction in the presence of hydrogen and said hydrocarbon conversion conditions comprise reforming conditions.

4,268,378

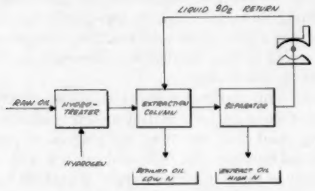
METHOD FOR REMOVING NITROGEN FROM SHALE OIL BY HYDROGENATION AND LIQUID SULFUR DIOXIDE EXTRACTION

Leslie E. Compton, Claremont, Calif., assignor to Occidental Research Corporation, Irvine, Calif.

Continuation of Ser. No. 55,285, Jul. 5, 1979, abandoned. This application Apr. 8, 1980, Ser. No. 138,559

Int. Cl.³ C10G *21/06*

U.S. Cl. 208—254 R **14 Claims**



1. A method for reducing the nitrogen content of shale oil comprising the steps of:

hydrogenating a shale oil having a first nitrogen content under conditions for effecting saturation of substantially all olefinic hydrocarbons present in the shale oil without substantially hydrogenating the nitrogen-containing compounds present in the shale oil;

extracting the hydrogenated shale oil with liquid sulfur dioxide for forming a shale oil phase having a second nitrogen content less than the first nitrogen content of the unhydrogenated shale oil and a liquid sulfur dioxide phase containing nitrogen-containing compounds; and

separating the shale oil phase having a second nitrogen content from the liquid sulfur dioxide phase.

4,268,379

SELECTIVE FLOCCULATION FOR INCREASED COAL RECOVERY BY FROTH FLOTATION

Andrew C. Poulos, Lakeland, Fla., and John D. Hightower, Abingdon, Va., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 23, 1977, Ser. No. 864,132

Int. Cl.³ B03B *1/04*

U.S. Cl. 209—5 **11 Claims**

10. A process for improving the recovery of clean coal which comprises adding an effective amount of a water soluble cationic polymer to the coal being processed to decrease the amount of clay in the aqueous coal suspension being treated.

4,268,380

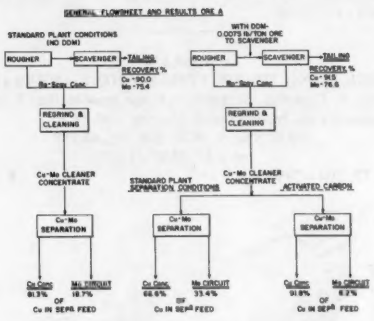
FROTH FLOTATION PROCESS

Douglas R. Shaw, Tucson, Ariz., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 934,132, Aug. 15, 1978, abandoned. This application Jul. 30, 1979, Ser. No. 62,092

Int. Cl.³ B03D *1/06*

U.S. Cl. 209—167 **7 Claims**



1. In the method for recovery of metal values by froth flotation from metallic sulfide mineral ores comprising copper and molybdenum, including the steps of:

(A) forming an aqueous mineral pulp from the ore;

(B) subjecting the pulp to rougher flotation to provide a scavenger feed and a rougher concentrate;

(C) adding an effective amount of an alkyl mercaptan of the formula $C_nH_{2n+1}SH$ in which n is at least 12 to the rougher flotation stage (B) or to the scavenger feed resulting therefrom, as a collector, and subjecting the scavenger feed to flotation to provide a scavenger tailing and a scavenger concentrate;

(D) combining, regrinding, and cleaning the concentrates from the rougher and scavenger flotation states (B) and (C) to provide a copper-molybdenum cleaner concentrate; and then

(E) subjecting the cleaner concentrate of step (D) to component mineral stage flotation separation; the improvement which comprises deactivating a substantial amount of the mercaptan collector on the mineral of the ore in the cleaner concentrate of step (D) prior to the component mineral stage flotation separation in step (E), said deactivating comprising adding a deactivating effective amount of activated carbon to the cleaner concentrate prior to flotation in step (E); to provide more effective mineral separation of said copper and molybdenum.

4,268,381

ROTARY PULP SCREENING DEVICE OF THE VERTICAL PRESSURE TYPE

Anthony W. Hooper, Montreal, Canada, assignor to Uniweld Inc., West Sherbrooke, Canada

Filed May 3, 1979, Ser. No. 35,515

Int. Cl.³ B07B *1/20*

U.S. Cl. 209—273 **19 Claims**

1. A rotary pulp screening device of the vertical pressure type comprising

cylindrical housing having an upper inlet chamber and a lower screening chamber with a disc ring dividing the upper chamber from the lower chamber,

inlet aperture in the upper chamber,

cylindrical screen mounted within the lower chamber,

said disc ring providing an entrance inlet to said lower screening chamber, said entrance inlet being of substantially the same diameter as said cylindrical screen,

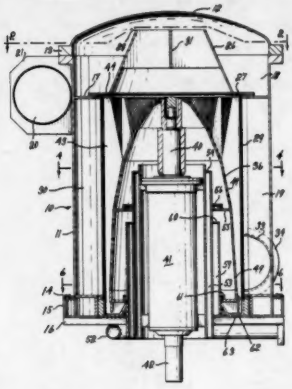
rotary impeller mounted for rotation about a central vertical

axis within the screen, the impeller having an approximately parabolid shaped body,

said paraboloid shaped body directing pulp stock against the cylindrical screen along the full length of the screen,

means for rotating the impeller,

impeller blades radiating from at least a portion of the paraboloid shaped body and extending to within a short distance of the screen over the length of the screen,



dilution means disposed within the cylindrical screen for controlling the consistency of pulp stock along the vertical length of the screening chamber,

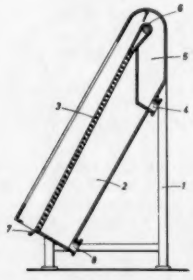
and pulp discharge outlet from the lower chamber outside the pulp screen.

4,268,382

SIEVE AND SIEVING APPARATUS FOR SEPARATING SOLIDS FROM A SUSPENSION

Reinhard Hanke, Leoben, and Kornel Jahn, Vienna, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 29, 1979, Ser. No. 89,241
Claims priority, application Austria, Nov. 7, 1978, 7942/78
Int. Cl.³ B07B *1/04*
U.S. Cl. 209—273 **4 Claims**



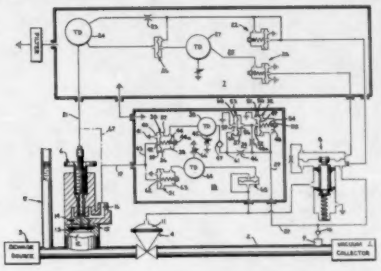
1. A sieve having an upper feed end and a lower discharge end for separating solids from a suspension, comprising a plurality of parallel sieve bars transversely spaced apart in a plane having a constant angle of inclination, each sieve bar having an upwardly facing side face enclosing an angle with the plane, all side faces being disposed on the same side of the sieve and diverging from the plane in the same direction whereby they constitute a stepped sieve surface on said upwardly facing side of the sieve, and the angles enclosed by the side faces with the plane increasing progressively in the direction of divergence of the side faces from said feed end to said discharge end.

4,268,383

FLOW SYSTEM CONTROL WITH TIME DELAY OVERRIDE MEANS

Arnold G. Trobaugh, Milwaukee, Wis., assignor to Johnson Controls, Inc., Milwaukee, Wis.

Filed Mar. 26, 1979, Ser. No. 23,679
Int. Cl.³ C02C *1/00*
U.S. Cl. 210—103 **12 Claims**



1. A sewerage flow control system having an accumulating means for storing of sewerage and means for establishing a predetermined differential pressure in a line connected to said accumulating means and to said collector means and having a normally closed main valve means in said line upstream of said collector means for deliverying of accumulated fluid medium to said collector means, comprising a controller having sensing means to sense the pressure condition upstream of said valve means and having valve control means actuated by said sensing means for selectively opening said normally closed valve means to apply said pressure to the opposite side of the valve means and to establish a predetermined flow cycle for delivery of said fluid medium, and pressure control means to sense the pressure in the downstream side of the valve means with the valve means closed and connected to actuate said valve control means of said controller to open said valve means to initiate said flow cycle in response to an abnormal pressure condition between the valve means and the collector means and operating independently of the sensing means, and said pressure control means including a time delay means to restrict the response thereof to a time period in excess of transient abnormal pressure condition created between the valve means and the source means, whereby said valve control means is independently actuated by said sensing means and by said pressure control means.

4,268,384

SPIN-OFF FILTER HEAD ASSEMBLY

Borje O. Rosaen, 4031 Thornoaks Dr., and Dale P. Fosdick, 3000 Hunting Valley Dr., both of Ann Arbor, Mich. 48104

Filed Mar. 21, 1977, Ser. No. 779,329
Int. Cl.³ B01D *35/14*
U.S. Cl. 210—133 **9 Claims**

1. A head for a spin-off filter comprising:

a stamped housing, said housing having an annular sidewall, a closed top wall and being open at its bottom, said housing having means formed along its bottom adapted to sealingly engage a spin-off filter;

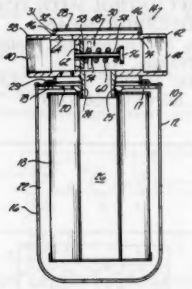
a first tubular cylindrical pipe extending through the sidewalls of said housing wherein one end of the first pipe forms a fluid inlet while the other end of the first pipe forms a fluid outlet;

means for sealing said first pipe to said housing;

a second tubular cylindrical pipe positioned in an aperture formed through said first pipe, said second pipe being fixedly secured to said first pipe so that said second pipe

extends downwardly through the open bottom of said housing;

means formed on the free end of the second pipe for detachable connection with the spin-off filter; and



fluid passage means formed through said first pipe for diverting fluid flow into the fluid inlet through the spin-off filter and from the filter to said fluid outlet.

4,268,385

CENTRIFUGAL ROTATING DISC ASSEMBLY FOR BIOLOGICAL WASTE WATER TREATMENT APPARATUS

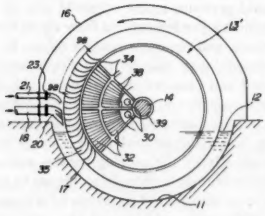
Norihiro Yoshikawa, Yokohama, Japan, assignor to Dengyosha Engineering Co., Inc., Tokyo, Japan

Filed Mar. 1, 1979, Ser. No. 16,555

Claims priority, application Japan, Mar. 14, 1978, 53-28867

Int. Cl.[3] B01D *21/26, 33/26;* **C02F** *3/10*

U.S. Cl. 210—150 **8 Claims**



1. In a centrifugal rotating disc assembly for a biological waste water treatment, apparatus including a plurality of rotating dual discs vertically fixed to a main shaft, each said rotating dual disc consisting of a main plate, a side plate parallel thereto and a plurality of radial blades arranged therebetween to form a centrifugal impeller having at its center a suction opening, the improvement comprising respective suction openings in opposition to each other formed in said main and side plate of each sectorbox-shaped structure surrounded by said main and side plates of said dual discs to form a suction chamber into which air and waste water enter through the suction openings, a number of radial pleats formed in said main and side plates extending radially outwardly from each said suction chamber to form a number of polygonal tubular channels open to the circumference of the disc when said main and side plates are assembled to allow air and waste water to flow from the suction chambers and to exit at the circumference of the disc, said pleats serving as spacers between adjacent plates, thereby increasing surface areas for attaching microorganisms, jet impinging on said impeller for rotating said disc assembly, and at least one communicating passageway formed in each said main and side plates and circumferentially traversing said tubular channels and blades, thereby improving permeabilities and discharge of waste water from said channels as the discs rotate to obtain a higher efficiency of aerobic treatment and reduce the driving force for the assembly.

4,268,386

SWIMMING POOL ACCESSORY

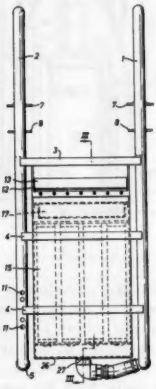
Michael A. May, Gay Bowers Farm, West Hanningfield, Chelmsford, Essex, England

Filed Feb. 2, 1979, Ser. No. 8,879

Claims priority, application United Kingdom, Feb. 7, 1978, 4840/78

Int. Cl.[3] E04H *3/20;* **B01D** *35/02*

U.S. Cl. 210—169 **5 Claims**



1. A swimming pool accessory comprising a pool ladder having hollow stiles suitable for use as conduits for water flowing to and from the pool, a unitary skimmer box and filter unit mounted on the ladder and connected to said stiles so that in use water skimmed off the skimmer box passes into one of the stiles and is returned to the pool via the other stile, the water passing through the filter before returning to the pool, the unitary skimmer box and filter unit being mounted on the ladder so that in use it is positioned between the ladder and the wall of the pool and the top of the skimmer box has a removable lid that abuts the top rung of the ladder.

4,268,387

FILTRATION SYSTEM

John E. Hall, Carmel, N.Y., assignor to John E. Hall, Carmel and Hall Decker McKibbin & Singer, Inc., New York, both of, N.Y., part interest to each

Continuation-in-part of Ser. No. 621,932, Mar. 19, 1979, abandoned. This application Oct. 31, 1979, Ser. No. 90,012

Int. Cl.[3] E04H *3/20*

U.S. Cl. 210—169 **11 Claims**

1. A filtration system for disposition under gravel on the bottom of a tank containing liquid to be filtered, and operable to be connected to a suction pump whereby liquid is drawn therethrough, comprising in combination:

(a) a closed first chamber;

(b) a closed second chamber;

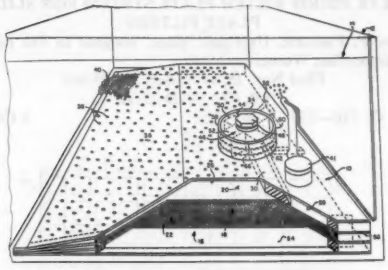
(c) microfilter means forming a filter conduit between said first and said second chambers and being operable to filter particles from liquid passing through said filter conduit;

(d) a third chamber including an outer wall, said outer wall being perforated to permit the liquid to pass therethrough but to prevent gravel from passing thereinto;

(e) a pump conduit including a pump outlet operable to communicate with the suction pump;

(f) a valve connected to said first, second and third chambers and to said pump conduit and being operable between a filtering first position and a cleaning second position, said

valve, in its filtering first position, simultaneously forming first and second liquid conduits, said first conduit being connected to, and providing liquid communication between said third chamber and said second chamber, and said second conduit being connected to and providing liquid communication between said pump conduit and said first chamber, whereby operation of the pump to remove liquid from said pump conduit will cause liquid to be drawn first through the gravel and the perforations in said outer wall into said third chamber, thereafter through said first conduit of said valve to said second chamber, then in a first flow direction through said microfilter means filter conduit into said first chamber from which it passes through said second conduit of said valve to said pump conduit to be discharged by the pump; and



said valve, in its cleaning second position, simultaneously forming third and fourth liquid conduits, said third conduit being connected to and providing liquid communication between said third chamber and said first chamber, and said fourth conduit being connected to and providing liquid communication between said pump conduit and said second chamber, whereby operation of the pump to remove liquid from said pump conduit will cause liquid to be drawn first through the gravel and the perforations in said outer wall into said third chamber, thereafter through said third conduit into said first chamber, then in a second flow direction opposite to said first flow direction through said microfilter means filtering conduit into said second chamber from which it passes through said fourth conduit of said valve to said pump conduit to be discharged by the pump.

4,268,388

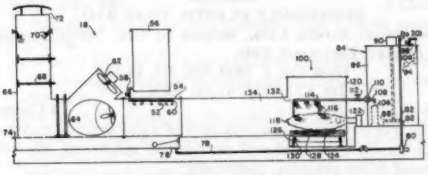
SYSTEM FOR WASTE DISPOSAL

Samuel T. Romeo, 100 Tower Dr., Stevensville, Md. 21666

Continuation-in-part of Ser. No. 101,831, Dec. 10, 1979. This application Jan. 29, 1980, Ser. No. 116,537

Int. Cl.[3] B01D *37/02*; F23G *7/04*

U.S. Cl. 210—180 **3 Claims**



1. In a system for concurrently treating both flammable and nonflammable waste material, including in sequence: means for mixing waste material with liquid, means for heating waste material when mixed with liquid and reducing at least a portion thereof to gaseous material, means for forcing said gaseous material to flow, means for treating said flowing gaseous material with liquid, means for filtering said flowing gaseous material, and means for recycling through the system filtrate from said filtering, the improvement comprising: the means for heating including means for projecting flame horizontally in a chamber and means for spraying said waste material mixed with liquid onto said flame substantially counter to the direction of said flame projection; the means for mixing include first means for mixing liquid with nonflammable waste and second means for mixing liquid with flammable waste, wherein the means for heating include a heated plate and means for spraying nonflammable waste onto the heated plate; wherein means for continuing combustion of waste material sprayed onto said flame is provided, said means for continuing combustion comprising a bed of sand under said flame in position for receiving waste material falling through the flame and in proximity to the flame promoting continued combustion; a car supporting the bed of sand and means for rolling the car from beneath said flame to a cleanout location; a first chamber around said heated plate; a second chamber around said flame and the means for forcing including each of said first and second chamber being an enclosure limiting outward flow of gaseous material to a single exhaust therefrom; said means for treating flowing gaseous material including chemical spray means disposed in the path of said flowing gaseous material; said means for forcing further including fanning means for inducing said waste material to flow; said means for treating including first and second filtering means and means spraying liquid at said first and second filter means; a sump, the first filtering means being vertically disposed and said liquid sprayed having means for carrying any filtrate downward into said sump; an upright duct having exhaust to the atmosphere, the second filtering means mounted horizontally across said upright duct in position for said gaseous material to flow upward therethrough and said means spraying liquid disposed for spraying liquid downwardly through said second filtering means counter to said flow of gaseous materials and into said sump; and the means for recycling having connection for returning all said filtrate from the sump to said first mixing means.

4,268,389

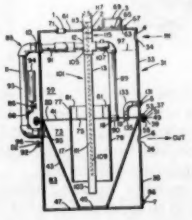
SEWAGE TREATMENT

Walter W. Rapp, and Gary A. Crosby, both of New Iberia, La., assignors to Red Fox Industries Inc., New Iberia, La.

Filed Nov. 16, 1979, Ser. No. 95,107

Int. Cl.[3] C02F *3/20, 3/22*

U.S. Cl. 210—195.3 **10 Claims**



1. A sewage treater comprising an aerator, a clarifier, and a disinfector,

said clarifier being disposed beneath said aerator and the top of the clarifier with a common wall therebetween forming the bottom of the aerator,

first passage means to conduct fluid from the aerator to the clarifier,

said first passage means comprising a central port in said common wall and circular guide baffle means around said port,

and second passage means to conduct fluid from the clarifier to disinfector, said aerator having an influent inlet, said disinfector having an effluent outlet,

said treater being distinguished in that said aerator includes

a vessel and nozzle means for admitting air to the vessel in a direction to cause fluid in the vessel to move orbitally about a vertical axis,

said nozzle means being disposed at a level below the top of said guide baffle means.

10. A sewage treater comprising an aerator, a clarifier, and a disinfector,

said clarifier being disposed beneath said aerator and the top of the clarifier with a common wall therebetween forming the bottom of the aerator,

first passage means to conduct fluid from the aerator to the clarifier,

said first passage means comprising a central port in said common wall,

and second passage means to conduct fluid from the clarifier to disinfector, said aerator having an influent inlet, said disinfector having an effluent outlet,

said treater being distinguished in that said aerator includes a vessel and nozzle means for admitting air to the vessel in a direction to cause fluid in the vessel to move orbitally about a vertical axis,

said nozzle means being disposed at a level proximate the common wall between said aerator and clarifier.

4,268,390

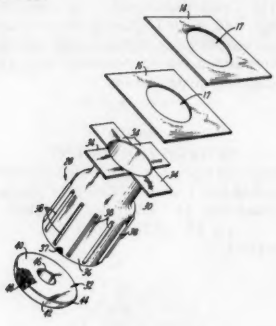
STORM DRAIN SUMP FILTER

William T. J. Cunningham, 528 E. 43rd St., Brooklyn, N.Y. 11203

Continuation-in-part of Ser. No. 960,618, Jan. 2, 1979, abandoned. This application Sep. 10, 1979, Ser. No. 74,091

Int. Cl.[3] **B01D** *23/04*

U.S. Cl. 210—232 **5 Claims**



1. A filter for use with a drain having a sump and a fluid outlet through a wall of the sump, said filter comprising:

a bag-like member having a cylindrical body portion and a relatively circular base portion secured to a bottom wall of said cylindrical body portion;

said bag-like member including upper support means for positioning on an upper perimeter of the sump to align said bag-like member in a downwardly depending relationship in the sump, said support means having opening means for communicating with an interior portion of said cylindrical body portion;

said bag-like member being fabricated from a resilient mesh-like synthetic material which is relatively non-degradable by water or organic matter, said mesh-like synthetic material providing filtering openings through said bag-like member;

spacer means secured to an outer surface of said cylindrical body portion of said bag-like member to prevent said cylindrical body portion from abutting against a wall of the sump;

said spacer means including a plurality of longitudinally extending spacer fins disposed parallel to each other and spaced around said cylindrical body portion, said spacer fins being fabricated from a synthetic material which is relatively non-degradable by water or organic matter;

said base portion having an opening in a bottom portion thereof to provide a toroid-shaped outer portion;

weighted means disposed in said toroid-shaped outer portion for maintaining said cylindrical body portion of said bag-like member in a relatively expanded configuration, said weighted means being reshapeable to permit said base portion to be fitted in various sized sumps, said weighted means including a plurality of weighted materials each having a larger dimension than said filtering openings through said bag-like member to retain said weighted materials in said toroid-shaped outer portion.

4,268,391

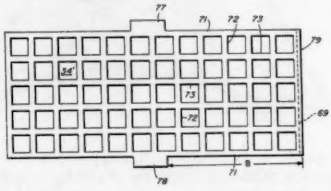
LEAK PROOF FILTER PLATE SYSTEM FOR SLIDE PLATE FILTERS

James P. Paquette, Uxbridge, Mass., assignor to The Berlyn Corporation, Worcester, Mass.

Filed Nov. 28, 1979, Ser. No. 98,061

Int. Cl.[3] **B01D** *25/12*

U.S. Cl. 210—236 **6 Claims**



1. In slide filter apparatus for filtering contaminants from a fluid working material flowing in a defined path, the apparatus having rigid filter plate means for carrying on an up-stream surface replaceable filter media means from an inlet port passageway across the path of fluid flow to an outlet port passageway, said filter plate means being in sections which are butted end to end in a continuing progression across said path, each said section carrying a separate portion of said filter media, the space between each pair of abutting sections forming a gap into which fluid working material can escape from said path, the improvement comprising open frame means overlying said separate portion of filter media on said up-stream surface of each of said sections, each said frame means being off-set end-wise on the underlying filter plate section so as to form between abutting frame ends a second gap which is off-set from the gap between the underlying abutting filter plate sections, said second gap overlying a portion of the filter media carried by one of said underlying filter plate sections, whereby a path through said gaps contains said portion of filter media.

4,268,392

DISPOSABLE PLASTIC TRAP BAG

John Hayes, Aurora, Colo., assignor to Tiger Manufacturing Company, Englewood, Colo.

Filed Jun. 1, 1979, Ser. No. 44,578

Int. Cl.[3] **B01D** *43/00;* **E03C** *1/18*

U.S. Cl. 210—238 **4 Claims**

1. a trap interposed in a fluid path of a sink drain to remove particles from the fluid and provide for quick and efficient disposal of the particles, comprising:

a receptacle having a rim formed at the top thereof and an opening formed adjacent the top of said receptacle;

a trap bag having an aperture and being held in said receptacle to remove and contain particles from the fluid, said trap bag including an upper segment, a bottom segment sealingly connected to said upper segment and a mouth formed at the top portion of said upper segment, said upper segment having a raised longitudinal seal portion

and a flat seal portion located along the path of said raised seal portion while being positioned to overlie said rim, said raised seal portion having a greater width than portions of said upper segment of said trap bag overlying said rim while said flat seal portion being of substantially the same width as portions of said upper segment of said trap bag overlying said receptacle rim;

a generally flat cover member to which the rim of said receptacle is connected to form a closure for the top of said receptacle, said cover member having an inlet connectable to a first pipe to receive fluid which carries particles and an outlet connectable to a second pipe to discharge the fluid after the particles have been deposited in said trap bag;

a gasket member connected to said cover member and positioned contiguously adjacent said flat seal portion of said upper segment of said trap bag overlying said receptacle rim so that, when connecting said cover member to said receptacle, said gasket member provides a tight, uniform seal between said gasket member and said trap bag to substantially prevent leakage of fluid therefrom;

clamping means for releasably fastening said receptacle to said cover; and

a valve member sealingly connected to said trap bag overlying said trap bag aperture and being insertable through said opening in said receptacle when said trap bag is placed in said receptacle, said valve member being openable to permit fluid contained in the top portion of said trap bag to drain when said trap bag is filled with particles prior to the removal of said receptacle from said cover member.

4,268,393

APPARATUS FOR CENTRIFUGAL SEPARATION OF PLATELET-RICH PLASMA

Maxim D. Persidsky, San Francisco, and Nan-Sing Ling, San Rafael, both of Calif., assignors to The Institutes of Medical Sciences, San Francisco, Calif.

Filed May 5, 1980, Ser. No. 146,462
Int. Cl.³ B01D 21/26
U.S. Cl. 210—516 **3 Claims**

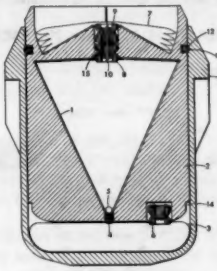
1. Apparatus for separating platelets from a blood sample comprising

(a) a body adapted to be subjected to centrifugal force and containing a cavity with a volume of displacing liquid in the cavity,

(b) a piston mounted in the body for movement into the cavity in response to centrifugal force on the piston with the piston containing a centrifugal chamber having inner and outer ends with a blood sample in the chamber from which platelets are to be withdrawn, and injection passageway means for movement of displacing liquid from the cavity to the centrifugal outer end of the chamber in response to movement of the piston into the cavity,

(c) a discharge passageway at the centrifugally inner end of the chamber for discharging platelet rich plasma in response to injection of displacing liquid into the chamber,

(d) a collapsible bag in the cavity surrounding the body of displacing liquid and communicating with the injection passageway means,



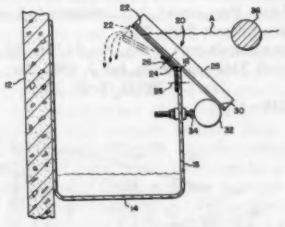
(e) means for preventing flow of displacing liquid from the cavity to the chamber before centrifugal stratification of blood cells in the chamber.

4,268,394

BEACH FOR THE SCUM TROUGH OF A SEWAGE SETTLING TANK OR THE LIKE

Gerald D. Wolfe, Zelienople, Pa., assignor to Sybron Corporation, Rochester, N.Y.

Filed Mar. 28, 1980, Ser. No. 134,852
Int. Cl.³ B01D 23/20
U.S. Cl. 210—525 **7 Claims**



1. A beach for controlling spill over of liquid from a settling tank into a scum trough comprising:

(a) an upright wall separating the scum trough from the liquid in the settling tank, the upper edge of said wall being normally below the level of liquid in the settling tank;

(b) a beach plate hinged to and extending substantially the full length of the upper edge of said upright wall, said beach plate extending upward and inward toward said scum trough;

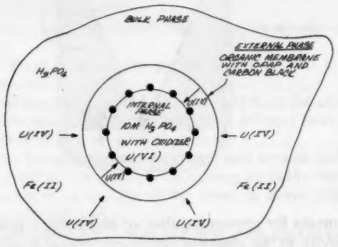
(c) a member extending from said beach plate downward and into the liquid in the settling tank; and

(d) bias means operating on said member for urging said member toward said wall, said bias means being of sufficient strength to overcome the head of liquid in the settling tank above the upper edge of said wall, said bias means acting to maintain said beach plate generally upright and extending above the level of liquid in the settling tank to prevent spill over of liquid from the settling tank and into the scum trough.

4,268,395
EXTRACTION BY SOLID STABILIZED EMULSIONS

Robert D. Stewart, Yorba Linda, Calif., assignor to Babcock-Brown Boveri Reaktor GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 4, 1978, Ser. No. 948,618
Int. Cl.[3] B01D *11/00*
U.S. Cl. 210—634 15 Claims

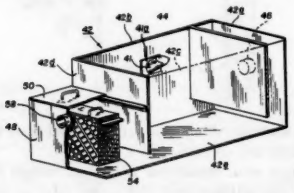


1. An extraction process for transfer of at least one species from a fluid phase to a first liquid phase receptive to such species which comprises intimately contacting the fluid phase with an emulsion of the first liquid phase in a second particulate solids-containing liquid phase which is permeable with respect to such species and substantially immiscible in the first liquid phase and containing at least one substantially insoluble particulate solid which is substantially nonreactive to constituents contained in each of such phases and present in an amount sufficient to form a stable emulsion of the first liquid phase in the second particulate solids-containing liquid phase for a time sufficient for transfer of such species to the second particulate solids-containing liquid phase of such emulsion.

4,268,396
OIL RECOVERY APPARATUS AND METHOD

John G. Lowe, Pequannock, N.J., assignor to Lowe Engineering Company, Lincoln Park, N.J.

Continuation-in-part of Ser. No. 59,595, Jul. 23, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,741
Int. Cl.[3] B01D *15/02, 25/38*
U.S. Cl. 210—670 48 Claims



1. A recovery apparatus adapted for removing grease and/or oil in an essentially liquid condition from a contaminated fluid such as dishwasher which dishwater has grease and/or oil floating on or near the surface, said apparatus including:

(a) a container having at least two compartments, said container having an influent passageway into an end in a first compartment which contains at least one strainer and an effluent passageway through an opposite end of a recovery compartment, said compartments having fluid conducting means leading from the strainer compartment to the recovery compartment;

(b) a strainer disposed in said strainer compartment, and a flow means for carrying an influent flow of contaminated fluid to this strainer, said strainer adapted to remove from the contaminated water flowing therethrough larger particles of food, cigarette butts and like debris which flows to the strainer and after straining said influent flow the contaminated water including grease and/or oil is fed to said recovery compartment;

(c) a rotating plastic disk mounted on a rotating shaft and disposed intermediate the end walls of the recovery compartment and disposed so that the disk is substantially normal to the surface of the contaminated fluid in said recovery compartment and as this disk is rotated it is partially immersed in the contaminated fluid with the grease and/or oil floating thereon and with said grease and/or oil being attracted to the sides of the disk sufficiently for the grease and/or oil to be lifted from the contaminated fluid by the rotating disk;

(d) at least one baffle carried in said recovery compartment, said baffle spaced from and adjacent a rear wall thereof and having a top edge normally above the fluid in the recovery compartment, this baffle disposed so as to inhibit the flow of any contaminated fluid over the top of the baffle while said baffle provides an opening thereunder for the flow of clear water after the removal of grease and/or oil, said clear water from said recovery compartment as the effluent flow;

(e) a readily removable bridge member carried in said recovery compartment and having a midportion formed with a cutout, this cutout positioned so that said cutout in the mounted bridge member straddles the disk as it is rotated, said bridge member in a mounted condition having its mounting midportion disposed in a substantially normal position to the surface of the fluid and removable from the disk by upward movement from the recovery compartment, the bridge member carried by support means within said compartment;

(f) a pair of scraper blades made of flexible plastic and mountable on the bridge member, each of said scraper blades when in engagement with the sides of the disk bent to provide a bias causing the disk engaging edges of said pair of blades to scrape the attracted grease and/or oil from the sides of the rotated disk after this disk emerges from the fluid and prior to the reentry of the rotated disk into the contaminated fluid, said scraper blades in mounted condition being substantially vertical and near the zenith of the disk, said scraper blades in a mounted condition adapted to engage the sides of the disk and to substantially equally restrain the rotating disk from unwanted movement;

(g) motive power means for rotating the disk at a desired speed and direction;

(h) means for removably securing the scraper blades to the bridge member so that the blades straddle the disk as it is rotated and when replacement is desired for repair said bridge member is removed from the second compartment, and

(i) fluid conductor pipe adapted to receive the scrapings of grease and/or oil from a downward end of the blade and to retain the distal end of the scraper blade as it is curved into a scraping condition and to carry said scrapings by gravity to and through a wall of the recovery compartment.

4,268,397
METHOD OF TREATING WASTE WATER

Toshio Horie, Yokohama; Shouji Tomioka, and Nobuyoshi Mine, both of Kitakyushu, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, Japan

Filed Jul. 27, 1979, Ser. No. 61,263
Claims priority, application Japan, Jul. 29, 1978, 53-92063; Apr. 6, 1979, 54-41057
Int. Cl.[3] C02F *1/72*
U.S. Cl. 210—746 5 Claims

1. A waste water-treating method, which comprises the steps of: adjusting the pH value of an aqueous solution containing a nitrous acid radical within a range of 2 to 5;

intermittently adding to a quantity of said thus adjusted

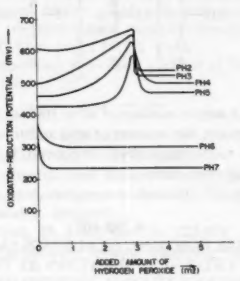
aqueous solution hydrogen peroxide in an amount far smaller than that which is sufficient but not excessive for complete oxidation of the nitrous acid radical contained in said aqueous solution into a nitric acid radical;

measuring, by means of an oxidation-reduction potentiometer, the oxidation-reduction potential of the aqueous solution thus treated with hydrogen peroxide when said potential is in a stable state after each charge of hydrogen peroxide;

amplifying the measured potential by an amplifier;

when a measurement timer issues a measurement-commencing instruction after addition of the respective amounts of hydrogen peroxide, converting the measured amplified voltage into a digital signal by an analog-digital converter;

causing the digital data to be stored in an up-down counter;



computing in said up-down counter a variation between the digitally expressed oxidation-reduction potentials measured at the respective adjacent points of time;

comparing by means of a comparator a variation between the oxidation-reduction potentials measured at the respective adjacent points of time which indicates a decrease in said potential with a predetermined amount preset in a digital presetter;

stopping the addition of hydrogen peroxide when a variation between the oxidation-reduction potentials measured at the respective adjacent points of time is larger than said predetermined amount, thereby indicating a decrease in said oxidation-reduction potential; and

throwing away the aqueous solution in the neutralized form.

4,268,398

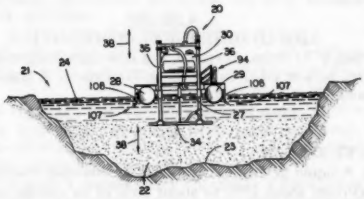
SLUDGE AGITATING METHOD

William D. Shuck, 4610 Ingleside La., Indianapolis, Ind. 46227; Frederick D. Lind, R.R. 1, Box 110B, Whiteland, Ind. 46184, and John W. Cole, 5212 Bluff Rd., Indianapolis, Ind. 46217

Division of Ser. No. 921,257, Jul. 3, 1978, Pat. No. 4,191,479. This application Feb. 21, 1979, Ser. No. 13,323

Int. Cl.³ C02F *1/74*

U.S. Cl. 210—758 **10 Claims**



1. A method of agitating accumulated sludge in a sludge deposit covered by a blanket of water in a waste water treatment facility lagoon in order to condition the sludge so that the sludge can be pumped from the lagoon and comprising the steps of:

lowering a fluid dispensing device from a raised submerged position in the accumulated sludge in the deposit in the lagoon to a further submerged position in the sludge where the dispensing device is further below the surface of the sludge; and

sending high-velocity streams of fluid out of said fluid dispensing device and into said sludge.

4,268,399

PURIFICATION OF POLLUTED WATER

E. O. Box, Jr., and Floyd E. Farha, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 877,539, Feb. 13, 1978, abandoned. This application Nov. 21, 1979, Ser. No. 96,715

Int. Cl.³ C02F *1/74*

U.S. Cl. 210—762 **34 Claims**

1. A process for the purification of an aqueous stream containing dissolved and/or suspended organic materials therein, which process comprises contacting said aqueous stream with an oxygen-containing gas and a catalyst consisting essentially of zinc titanate under oxidative conditions including a temperature and a ratio of water to oxygen sufficient to convert said organic materials to innocuous materials and said aqueous stream into a potable aqueous product.

4,268,400

AQUEOUS DRILLING FLUID ADDITIVE, COMPOSITION AND PROCESS

James M. Lucas; Alphonse C. Perricone, and Dorothy P. Enright, all of Houston, Tex., assignors to Milchem Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 946,227, Sep. 27, 1978, abandoned. This application Mar. 18, 1980, Ser. No. 131,327

Int. Cl.³ C09K *7/02*

U.S. Cl. 252—8.5 C **16 Claims**

1. In a method of drilling a well into a subterranean formation in which an aqueous drilling fluid containing clayey material is circulated into the well, the steps of forming a filter cake on the wall of the well to decrease loss of fluid from the drilling fluid which comprises: (1) admixing with said drilling fluid an amount of at least about 0.25 pounds per 42 gallon barrel of a terpolymer of: (a) a monovalent alkali metal salt of acrylic acid; (b) an hydroxy alkyl acrylate selected from the class consisting of 2-hydroxyethylacrylate, 2-hydroxybutylacrylate and 2-hydroxypropylacrylate; and (c) acrylamide, a 0.2% by weight aqueous solution of said terpolymer having a viscosity at about 25° C. of from between about 6 centipoises and about 85 centipoises, as determined at a shear rate of 511 reciprocal seconds, the amount of said monovalent alkali metal salt of acrylic acid utilized in said terpolymer being from between about 5 mole percent and about 62 mole percent, the amount of said hydroxy alkyl acrylate utilized in said terpolymer being from between about 2 mole percent and about 40 mole percent, the amount of said acrylamide utilized in said terpolymer being from between about 31 mole percent and about 91 mole percent; and (2) circulating said drilling fluid in said well.

4,268,401

LIQUID DETERGENT COMPOSITIONS HAVING WASHING AND SOFTENING PROPERTIES

Ursula Meschkat, Wiesbaden-Biebrich, and Rudolf Bimczok, Mainz-Gonsenheim, both of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Mainz, Fed. Rep. of Germany

Continuation of Ser. No. 678,655, Apr. 20, 1976, abandoned. This application Sep. 16, 1977, Ser. No. 833,971

Int. Cl.² C11D *1/62, 1/835;* D06M *13/46*

U.S. Cl. 252—8.8 **14 Claims**

1. An aqueous-based liquid washing agent having good

washing and fabric softening action, comprising (a) from about 7 to about 40% by weight of at least one nonionic surface active agent, (b) from about 3 to about 15% by weight of at least one C_8–C_{20}-fatty acid polyglycol diester and (c) from about 1 to about 7.5% by weight of at least one quaternary ammonium compound with textile-softening properties.

4,268,402

LIQUEFACTION OF AQUEOUS TEXTILE SOFTENERS

Joachim Kurze, Hirschberg; Rolf Fikentscher, Ludwigshafen, and Georg Krusche, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

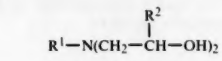
Filed Sep. 17, 1979, Ser. No. 76,413

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1978, 2841076

Int. Cl.³ **D06M** *13/36, 13/46*

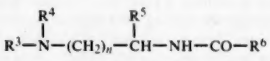
U.S. Cl. 252—8.8 **10 Claims**

1. A process for liquefying an aqueous textile softener which contains, as the active ingredient, from 15 to 40 percent by weight of a condensate of 1 mole of a bis- or tris-hydroxyalkylamine of the formula



I

where R^1 is H, alkyl of 1 to 4 carbon atoms, hydroxyethyl or 2-hydroxypropyl and R^2 is H or CH_3, with from 0.8 to 2 moles of a fatty acid of 16 to 18 carbon atoms, the said condensate being in the form of a salt with an inorganic or organic acid or being partially or completely quaternized at the amine nitrogen, wherein there is added to the softener from 3 to 15 percent by weight, based on the said active ingredient, of a compound of the formula



II

where n is an integer from 1 to 4, R^3 and R^4 independently of one another are methyl, ethyl or propyl, R^5 is hydrogen or methyl and R^6 is alkyl of 7 to 13 carbon atoms including a chain of at least 7 carbon atoms, as a salt with an inorganic or organic water-soluble acid, and the pH of the formulation is brought to 2.5 to 6.

4,268,403

OIL RECOVERY USING A DIMETHYLAMIDE IN A FLUID CARRIER

Robert H. Buckman, Memphis, Tenn.; Peter J. Young, Calgary, Canada, and Miguel L. Pulido, Memphis, Tenn., assignors to Buckman Laboratories, Inc., Memphis, Tenn.

Filed Oct. 25, 1979, Ser. No. 88,260

Int. Cl.³ **E21B** *43/22*

U.S. Cl. 252—8.55 D **20 Claims**

1. A method for recovering oil from an oil-bearing formation which comprises introducing into said formation to displace the oil contained therein a fluid carrier wherein said fluid carrier is water, steam, or a hydrocarbon fluid selected from the group consisting of light distillate, naphtha, reformate, pale oil, toluene, and diesel fuel containing from about 0.25 to about 100 parts by weight of an N,N-dimethylamide of a straight chain carboxylic acid per million parts of said fluid carrier, characterized in that said carboxylic acid contains from 12 to 18 carbon atoms.

4,268,404

ADDITIVE FOR USE IN METAL WORKING

Michael Ahlgrim, Erftstadt; Gerhard Mietens, Hürth-Efferen; Franz-Josef Dany, and Joachim Kandler, both of Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

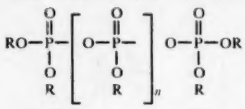
Filed Nov. 13, 1979, Ser. No. 93,895

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850244

Int. Cl.³ **C10M** *1/10, 3/02, 3/04, 5/04*

U.S. Cl. 252—25 **5 Claims**

1. An oil-based composition for use in metal working containing as an additive an ammonium polyphosphate of the general formula



in which n is a whole number of 50 to 1000 and R stands for an ammonium group, the amount of said additive being sufficient to impart to said composition improved high pressure and wear-retarding properties.

4,268,405

METHOD FOR FORMING GLAUBER'S SALT CRYSTALS WITH REDUCED ENCAPSULATION BY THE ADDITION OF ETHYLENE GLYCOL MONOBUTYL ETHER

Carlyle S. Herrick, Alplaus, and Kenneth P. Zarnoch, Clifton Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 3, 1979, Ser. No. 63,372

Int. Cl.³ **C09K** *5/06*

U.S. Cl. 252—70 **6 Claims**

1. In the method of storing thermal energy in and retrieving thermal energy from a liquid-solid phase-change material for which sodium sulfate decahydrate is the solid form, wherein said phase-change material is maintained in a container and fluid is circulated over the outer surface of said container to effectuate heat exchange between said fluid and said material, the improvement comprising the steps of:

(A) including ethylene glycol monobutyl ether in admixture with said phase-change material in said container, said ethylene glycol monobutyl ether being included in an amount effective to effect at least a decrease in average thickness of the Na_2SO_4-encapsulating wall of sodium sulfate decahydrate crystals relative to the average thickness of the Na_2SO_4-encapsulating wall thereof which would be formed in the absence of ethylene glycol monobutyl ether, and

(B) subjecting said container to motion which will induce interparticle-motion of crystals present in said phase-change material.

4,268,406

LIQUID DETERGENT COMPOSITION

Thomas P. O'Brien, Loveland, and Lawrence Benjamin, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 19, 1980, Ser. No. 122,143

Int. Cl.³ **C11D** *7/56, 7/54*

U.S. Cl. 252—105 **7 Claims**

1. A liquid detergent composition consisting essentially of:

(a) from about 15% to about 50% of an anionic surfactant selected from the water-soluble salts of organic sulfuric reaction products having in their molecular structure an alkyl radical containing from about 8 to about 22 carbon atoms and a radical selected from the group consisting of

sulfonic acid, sulfuric acid ester radicals and mixtures thereof

(b) from about 2.5% to about 10% of an amide of a fatty acid having the general formula

$$R_1—CO—N(H)_m(R_2OH)_{2-m}$$

wherein R_1 is an aliphatic hydrocarbon radical having from about 7 to about 21 carbon atoms, R_2 is an aliphatic hydrocarbon radical having from 1 to 3 carbon atoms and m is zero, 1 or 2,

(c) from about 2% to about 25% of a reducing agent selected from the group consisting of water-soluble salts of sulfites, bisulfites, thiosulfates, metabisulfites, salts of phosphorus and hypophosphorous acids, salts of hydrazine and hydroxylamine, stannites and mixtures thereof,

(d) from about 2% to about 20% of a protein denaturant selected from the group consisting of urea, guanidine and its salts, thiourea, biuret, thiobiuret, ammonia, monoethanolamines, triethanolamine, and mixtures thereof, and

(e) from about 20% to about 88.5% water,

said detergent composition providing a pH of at least 9.5 in a 0.4% solution in water at 20° C.

4,268,407

CLEANING COMPOSITION

David G. Hey, Northwich, and Robert W. Wheelhouse, Runcorn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 20, 1980, Ser. No. 123,074

Claims priority, application United Kingdom, Mar. 2, 1979, 7387/79

Int. Cl.[3] **C11D** *7/50, 7/30, 7/32;* **C23G** *5/02*

U.S. Cl. 252—171 **6 Claims**

1. A cleaning composition consisting essentially of 92 to 95 weight percent of 1,1,2-trichloro-1,2,2-trifluoroethane, 5 to 7 weight percent of methanol and 0.05 to 1 weight percent of methyl acetate.

4,268,408

SOLID CYANURIC CHLORIDE HANDLING IMPROVEMENTS WITH TRICALCIUM PHOSPHATE

Thomas M. Raspet, Greensboro, N.C., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jun. 25, 1979, Ser. No. 51,554

Int. Cl.[3] **C09K** *3/00*

U.S. Cl. 252—182 **4 Claims**

1. A non-lumping, free-flowing cyanuric chloride composition comprising cyanuric chloride having admixed therewith and distributed therethrough 0.1 to 5% of finely divided tricalcium phosphate of the formula $Ca_3(PO_4)_2$.

4,268,409

PROCESS FOR TREATING RADIOACTIVE WASTES

Eiichi Ga; Koichi Chino; Makoto Kikuchi; Akira Oda, and Susumu Horiuchi, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 17, 1979, Ser. No. 58,174

Claims priority, application Japan, Jul. 19, 1978, 53-88654; Jul. 19, 1978, 53-88656

Int. Cl.[3] **G21F** *9/08*

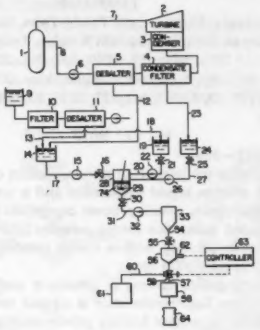
U.S. Cl. 252—301.1 W **11 Claims**

1. A process for treating radioactive wastes, which comprises:

a step of heating a first slurry containing granular ion exchange resin as a radioactive waste generated from a radioactive material-handling facility, thereby making the granular ion exchange resin into powder;

a step of heating a second slurry containing a filter aid as a radioactive waste generated from said radioactive material-handling facility, thereby making the filter aid into powder;

a step of obtaining mixed powder of the powder of the granular ion exchange resin and the powder of the filter aid as a binder, a ratio of the powder of the granular ion



exchange resin to the mixed powder being not more than 90% by weight; and

a step of shaping the mixed powder into pellets.

4,268,410

POLYETHER POLYESTER SURFACTANTS, THEIR PRODUCTION AND USES

John J. Allan, Bramley; Richard G. Foster, Warlingham, and Paul L. Leversidge, Epsom Downs, all of Great Britain, assignors to Honeywill-Atlas Limited, Great Britain

Filed Jul. 17, 1979, Ser. No. 58,542

Claims priority, application United Kingdom, Jul. 31, 1978, 31730/78

Int. Cl.[3] **B01F** *17/34;* **C07C** *69/40, 69/66;* **C11C** *3/10*

U.S. Cl. 252—312 **5 Claims**

1. An aqueous solution containing from 10 to 90% by weight of a surfactant prepared by the reaction of

(a) an ethoxylated C_{9-22} fatty acid ester of sorbitan, ethoxylated with 4 to 40 mols of ethylene oxide per mol of ester, provided that up to 20 mol percent of ethylene oxide may be replaced by propylene oxide and

(b) a di- or tri- basic acid in which the amount of acid used in the reaction is such as to provide from 0.5 to 1.8 times the number of acid groups needed to esterify half the hydroxyl groups present in the ethoxylated sorbitan ester.

5. An emulsion of a water-immiscible oil in water, in which 5–15% by weight of the total emulsion weight is provided by a surfactant containing an aqueous solution said surfactant being prepared by the reaction of

(a) an ethoxylated C_{9-22} fatty acid ester of sorbitan, ethoxylated with 4 to 40 mols of ethylene oxide per mol of ester, provided that up to 20 mol percent of ethylene oxide may be replaced by propylene oxide and

(b) a di- or tri- basic acid in which the amount of acid used in the reaction is such as to provide from 0.5 to 1.8 times the number of acid groups needed to esterify half the hydroxyl groups present in the ethoxylated sorbitan ester.

4,268,411
MICROCAPSULES HAVING A WALL OF INORGANIC SUBSTANCE AND PROCESS FOR THE PREPARATION THEREOF

Masahiro Iwata, Saitama, and Yuichi Taka, Soka, both of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1979, Ser. No. 25,066

Claims priority, application Japan, Mar. 30, 1978, 53/37332; Apr. 11, 1978, 53/42347; May 29, 1978, 53/64020; Jan. 22, 1979, 54/6262

Int. Cl.[3] **B01J** *13/02*

U.S. Cl. 252—316 **15 Claims**

1. A process for preparing microcapsules comprising a core of highly viscous liquid substances and a wall of a fine silica powder aggregate, which process comprises adding the highly viscous liquid substance into a powder bed of the fine silica powder under stirring with a cutter rotating at a rate in the range of 500 to 20,000 rpm.

9. Microcapsules having a structure such that a core of highly viscous liquid substance is coated with a wall of fine silica powder aggregate having gelatinization action upon said high viscous liquid substance and a gelatinized layer disposed between the wall and the liquid core substance, said gelatinized layer being formed by the gelatinization of the liquid core substance placed in contact with the wall due to the gelatinization action of the fine silica powder of the wall, said microcapsules produced by the process of claim 1.

4,268,412
METHOD FOR CONTINUOUSLY MANUFACTURING HIGH-TEMPERATURE REDUCING GAS

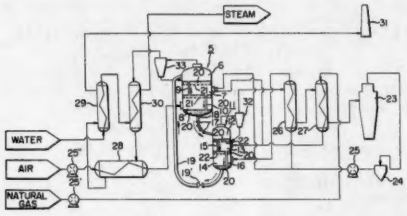
Tsuneo Miyashita, Yokohama; Yoshio Sato, Kamakura, and Yoshitsugu Ando, Yokohama, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1979, Ser. No. 91,561

Claims priority, application Japan, Nov. 30, 1978, 53-147209

Int. Cl.[3] **C10K** *3/06;* **C01B** *2/22;* **C10B** *2/28*

U.S. Cl. 252—373 **4 Claims**



1. A method for continuously manufacturing a high-temperature reducing gas, which comprises:

using a reducing gas manufacturing equipment including a heat medium heating apparatus and a gas reforming apparatus provided below said heat medium heating apparatus, said heat medium heating apparatus comprising a heat exchange chamber for heating of the upper stage and a combustion chamber for heating of the lower stage, said gas reforming apparatus comprising a reaction chamber for reforming of the upper stage and a heat exchange chamber for reforming of the lower stage;

burning a fuel gas in said combustion chamber for heating to continuously produce a high-temperature combustion exhaust gas, and, causing said produced high-temperature combustion exhaust gas to continuously flow upwardly from said combustion chamber for heating into said heat exchange chamber for heating;

on the other hand, introducing heat medium particles having an average particle size within the range of from 50 to 500 μm into said heat exchange chamber for heating, to preheat and fluidize said particles through heat exchange with said high-temperature combustion exhaust gas, then, introducing said preheated and fluidized particles into said combustion chamber for heating, to heat said preheated and fluidized particles further to a prescribed temperature through heat exchange with said high-temperature combustion exhaust gas;

continuously blowing a gas to be reformed containing CO_2 and H_2O and a hydrocarbon-containing gas into said heat exchange chamber for reforming, and, causing said gas to be reformed and said hydrocarbon-containing gas to continuously flow upwardly from said heat exchange chamber for reforming into said reaction chamber for reforming, while continuously introducing said heated fluidized particles from said combustion chamber for heating into said reaction chamber for reforming;

thereby heating said gas to be reformed and said hydrocarbon-containing gas through heat exchange with said heated fluidized particles in said reaction chamber for reforming, to continuously reform by reaction said gas to be reformed and said hydrocarbon-containing gas into a high-temperature reducing gas rich in H_2 and CO; then,

introducing said heated fluidized particles from said reaction chamber for reforming into said heat exchange chamber for reforming, to preheat said gas to be reformed and said hydrocarbon-containing gas in said heat exchange chamber for reforming; and then,

feeding said fluidized particles cooled through said heat exchange with said gas to be reformed and said hydrocarbon-containing gas in said reaction chamber for reforming and said heat exchange chamber for reforming back into said heat exchange chamber for heating;

thereby continuously manufacturing a high-temperature reducing gas while using said fluidized particles in recycle.

4,268,413
BODIES WITH REVERSIBLY VARIABLE TEMPERATURE-DEPENDENT LIGHT ABSORBENCE

Wolfgang Dabisch, Groosstr.11, 6228 Eltville, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,126

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738253

Int. Cl.[3] **G01K** *11/06, 11/16, 11/18;* **C09K** *3/00*

U.S. Cl. 252—408 **12 Claims**

1. A body with reversibly variable temperature dependent light absorbence made of at least a polymeric or resinous material, comprising a substantially optically transparent polymeric or resinous matrix material (A), which contains, embedded as a dispersed second phase, at least one organic substance (B), which is at least partially insoluble in the former and which, after being embedded in the matrix material, melts or congeals at the goal temperature of light-absorbence variation, and the refractive index of which, either above or below the goal temperature of light-absorbence variation, agrees substantially with the refractive index of the matrix material.

4,268,414
METHOD FOR REMOVING AND TREATING WASTE CATALYST

Katsuhiko Kawakami, Koganei; Kenji Komori, and Hiroshi Megumi, both of Kurashiki, all of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,923

Claims priority, application Japan, Nov. 2, 1978, 53-135383

Int. Cl.[3] **B01J** *21/20, 23/92, 23/94;* **C10G** *45/08*

U.S. Cl. 252—412 **10 Claims**

1. A method for removing and treating a waste catalyst resulting from the desulfurization and/or cracking of hydrocarbons, characterized by wetting said catalyst with water or a mineral oil containing one or more lactones.

4. The method of claim 1, wherein said water or mineral oil contains about 0.005 to 20 wt% of lactones.

4,268,415
REGENERATION OF SPENT HYDRODESULFURIZATION CATALYSTS WITH HETEROPOLY ACIDS AND HYDROGEN PEROXIDE

Raam R. Mohan, Berkley Heights; Bernard G. Silbernagel, Scotch Plains, and Gopal H. Singhal, Westfield, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 938,797, Sep. 1, 1978, abandoned. This application Jul. 19, 1979, Ser. No. 59,071

Int. Cl.[3] **B01J** *23/94, 23/92, 21/20;* **C10G** *23/02*

U.S. Cl. 252—413 **19 Claims**

1. An improved process for regenerating spent hydrofining catalysts which comprises contacting spent catalyst with an aqueous solution of a heteropoly acid containing about 1 to 50 wt.% hydrogen peroxide, based on the amount of heteropolyacid, impregnating with a water soluble cobalt or nickel salt and calcining at a maximum temperature of about 450° C.

4. The process of claim 1 in which the impregnation and calcination are repeated at least once.

6. The process of claim 1 in which the heteropoly acid is represented by the general formula $H_x(YM_{12}O_{40})$, where Y is at least one element selected from the group consisting of phosphorus, silicon, titanium, germanium, arsenic zirconium, thorium and cerium, M is at least one element selected from the group consisting of molybdenum, tungsten, niobium and tantalum and x is 3 when Y is pentavalent and 4 when y is tetravalent.

4,268,416
GASEOUS PASSIVATION OF METAL CONTAMINANTS ON CRACKING CATALYST

Laurence O. Stine, Western Springs, and Steven I. Richter, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 48,956, Jun. 15, 1979, abandoned. This application Sep. 28, 1979, Ser. No. 79,769

Int. Cl.[3] **B01J** *29/38, 21/20;* **C10G** *11/05, 11/04*

U.S. Cl. 252—416 **7 Claims**

1. A process for passivating a metal on a crystalline zeolite fluidized cracking catalyst which has been contaminated with said metal due to the use of said catalyst in fluidized cracking system not involving the introduction of hydrogen and wherein said catalyst is cycled between a cracking zone, in which said catalyst is contacted at an elevated temperature with a hydrocarbon feedstock containing said metal contaminant which deposits on said catalyst, and a regeneration zone, in which carbon is oxidized and thereby removed from said catalyst, said metal being included in the group comprising nickel, vanadium or iron, which process comprises contacting said catalyst at reduction reaction conditions with reducing gas consisting essentially of hydrogen that has been saturated prior to its contact with said catalyst with water in a liquid phase at a temperature of about 70° F. to about 200° F. so as to effect a reduction reaction with said metal and thereby reduce the quantity of coke generated in the cracking zone.

6. A process in accordance with claim 1 wherein said contacting of said catalyst with said reducing gas consisting essentially of hydrogen occurs in a passivation zone with said catalyst being cycled from said regeneration zone to said passivation zone and from said passivation zone to said cracking zone.

7. A process in accordance with claim 1 wherein said reduction reaction conditions comprise a temperature of from about 1100° F. to about 1350° F. and a pressure of from about atmospheric to about 35 psig.

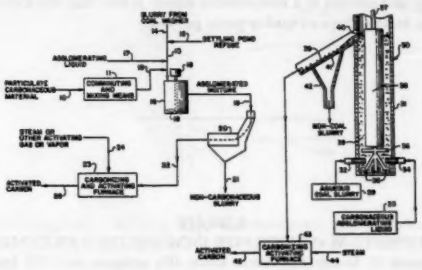
4,268,417
METHOD OF MAKING ACTIVATED CARBON

Leonard Messer, Pittsburgh, Pa., assignor to American Minechem Corporation, Coraopolis, Pa.

Continuation of Ser. No. 836,278, Sep. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 818,636, Jul. 25, 1977, abandoned, which is a continuation of Ser. No. 592,762, Jul. 3, 1975, abandoned. This application Mar. 7, 1979, Ser. No. 17,995

Int. Cl.[3] **C01B** *31/10, 31/14;* **B01J** *20/30, 21/18*

U.S. Cl. 252—421 **7 Claims**



1. A method of making activated carbon from an organic solid having carbonaceous and non-carbonaceous fine particles selected from the group consisting of coal, lignite and peat, said fine particles having a geometric mean particle size of less than 150 microns, comprising the steps of:

A. dispersing the carbonaceous and non-carbonaceous fine particles in water to form a slurry of at least 60 percent water by weight;

B. adding to the slurry a light hydrocarbon liquid being liquid at below 20° C., and being lyophilic to the carbonaceous fine particles and lyophobic to the water and the non-carbonaceous fine paraticles to form a mixture where less than 20 percent by weight of the light hydrocarbon liquid and the carbonaceous and non-carbonaceous fine particles is the light hydrocarbon liquid;

C. agitating the mixture to selectively agglomerate the carbonaceous fine particles into discrete agglomerates, while the non-carbonaceous fine particles remain substantially unagglomerated in the mixture;

D. separating discrete agglomerates of carbonaceous fine particles from the mixture;

E. carbonizing the discrete agglomerates by heating to at least 400° C.; and

F. activating the carbonized discrete agglomerates of carbonaceous fine particles to form activated carbon.

2. A method of making activated carbon as set forth in claim 1 wherein:

less than 10 percent by weight of the light hydrocarbon liquid and the carbonaceous and non-carbonaceous fine particles in the mixture formed in Step B is the light hydrocarbon liquid.

4. The method of making activated carbon of claim 1 wherein the light hydrocarbon liquid contains up to 50 percent of a heavy hydrocarbon liquid.

4,268,418
POLYMERIZATION CATALYST

Raymond E. Hoff, Palatine, Ill., assignor to Chemplex Company, Rolling Meadows, Ill.

Continuation-in-part of Ser. No. 912,874, Jun. 5, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,470

Int. Cl.[3] **C08F** *4/02, 4/64*

U.S. Cl. 252—429 B **34 Claims**

1. A supported olefin polymerization and copolymerization catalyst active in the presence of an organometallic co-catalyst prepared by mixing reactive materials comprising a lower alkyl aluminum halide, a dialkyl magnesium compound and a

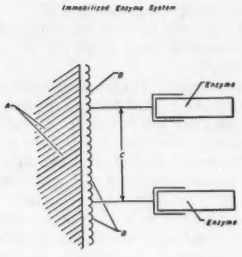
reducible titanium compound of the formula $Ti(OR)_nX_{4-n}$ where R is an alkyl group, X is a halogen atom, and n is an integer between 0 and 4, inclusive, in the presence of a solvent and a particulate organic polymer to form a reaction product supported on said particles, said particulate organic polymer comprising a graft copolymer of about 70–99.95 weight percent of a polyolefin polymer and about 30–0.05 weight percent of at least one monomer selected from the group consisting of polymerizable cyclic and polycyclic ethylenically unsaturated carboxylic acids and carboxylic acid anhydrides, and evaporating said solvent at a temperature which is less than the softening temperature of said organic polymer.

4,268,419

SUPPORT MATRICES FOR IMMOBILIZED ENZYMES

Ronald P. Rohrbach, Forest Lake, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Nov. 16, 1979, Ser. No. 95,020
Int. Cl.[3] B01J *31/06;* **C12N** *11/08, 11/14*
U.S. Cl. 252—430 **3 Claims**



1. A method for preparing a support matrix for immobilization of an enzyme which comprises:

(a) depositing a polyamine binding layer selected from the group consisting of aminopolystyrene and polyethyleneimine on an alumina support in an aqueous solution;

(b) removing excess polyamine from said alumina support;

(c) drying said alumina support of step (b) prior to contacting said alumina support with glutaraldehyde in step (d) to provide a final water content of from about 1% to about 30% by weight of said alumina support;

(d) contacting said dried alumina support of step (c) with a solution containing an excess of glutaraldehyde to provide crosslinkage between said glutaraldehyde and said polyamine binding layer; and

(e) recovering the resultant support matrix for immobilization of said enzyme.

2. The method of claim **1** wherein said drying of said matrix is continued until the water content of said matrix ranges from about 1% to about 10% by weight of the weight of said alumina support.

3. The method of claim **1** wherein said enzyme is selected from the group consisting of glucose isomerase, glucoamylase, cholesteroloxidase, alcohol dehydrogenase, amino acid oxidase, arginse, asparaginase, catalase, chymotrypsin, cellulase, collagenase, deoxyribonuclease, ficin, histidase, lactase, peroxidase, lysozyme, gamma amylase, papain, rennin, ribonuclease and urease.

4,268,420

HYDROCARBON-CONVERSION CATALYST AND ITS METHOD OF PREPARATION

Marvin R. Klotz, Batavia, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 897,360, Apr. 18, 1978, which is a continuation-in-part of Ser. No. 733,267, Oct. 18, 1976, abandoned, Ser. No. 819,974, Jul. 28, 1977, abandoned, and Ser. No. 836,403, Sep. 26, 1977, abandoned. This application Jul. 3, 1979, Ser. No. 54,958
Int. Cl.[3] B01J *21/02*
U.S. Cl. 252—432 **46 Claims**

1. A catalytic composition which comprises a crystalline borosilicate and a porous refractory inorganic oxide, said borosilicate and said inorganic oxide having been intimately admixed with one another, said borosilicate comprising a molecular sieve material providing an X-ray diffraction pattern comprising the following X-ray diffraction lines and assigned strengths:

d(A)	Assigned Strength
11.2 ± 0.2	W–VS
10.0 ± 0.2	W–MS
5.97 ± 0.07	W–M
3.82 ± 0.05	VS
3.70 ± 0.05	MS
3.62 ± 0.05	M–MS
2.97 ± 0.02	W–M
1.99 ± 0.02	VW–M

and having the following composition in terms of mole ratios of oxides:

$$0.9\pm0.2M_{2/n}O:B_2O_3:YSiO_2:ZH_2O,$$

wherein M is at least one cation having a valence of n, Y is between 4 and about 600, and Z is between 0 and about 160.

4,268,421

PREPARATION OF FURAN COMPOUNDS

Donald I. Garnett, Hockessin, Del., and Marvin L. Peterson, Woodstown, N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 24,098, Mar. 26, 1979, abandoned. This application Mar. 7, 1980, Ser. No. 128,112
Int. Cl.[3] B01J *27/10, 27/08;* **C07D** *307/36*
U.S. Cl. 252—441 **6 Claims**

1. A reaction medium comprising

(a) iodine from an alkali metal iodide,

(b) copper having an average oxidation state between 1 and 2,

(c) a solubilizing agent for cuprous ion which is soluble in water and forms a water-soluble complex with cuprous ion, and

(d) at least 20 moles per liter of water, the medium having a pH value of less than about 2.

2. The medium of claim **1** wherein the solubilizing agent is an alkali metal chloride, an alkaline earth metal chloride, or ammonium chloride.

6. A reaction medium comprising

(a) 1×10^{-12}–0.5 gram mole per liter of iodine from sodium iodide or potassium iodide,

(b) 0.1–10 gram moles per liter of copper from cuprous chloride and cupric chloride, the copper having an average oxidation state between 1 and 2, and

(c) 0.01–5 gram moles per liter of sodium chloride, calcium chloride or ammonium chloride,

the medium having a pH value of less than about 0.5.

4,268,422

TITANIUM DIOXIDE HYDRATE OF A PARTICULAR STRUCTURE AND PROCESS OF MANUFACTURE THEREOF

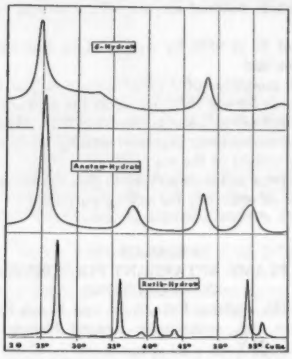
Heinrich Becker, Leverkusen; Edgar Klein, Odenthal-Osenau; Franz Rosendahl, Leverkusen, and Helmut Weber, Odenthal-Osenau, all of Fed. Rep. of Germany, assignors to Kronos Titan G.m.b.H., Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,172

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817551

Int. Cl.[3] **B01J** *21/06;* **C01G** *23/047*

U.S. Cl. 252—461 **13 Claims**



1. δTitanium dioxide hydrate having an X-ray diffraction diagram taken by means of Cu-Kα rays which exhibits main peaks at $2\theta = 24.6 \pm 0.4°$ and $48 \pm 0.4°$.

3. A process for producing δ titanium dioxide hydrate having an X-ray diffraction diagram taken by means of Cu-Kα rays which exhibits main peaks at $2\theta = 24.6° \pm 0.4°$ and $48° \pm 0.4°$, and mixtures of titanium dioxide hydrates containing at least 20% of said δ titanium dioxide hydrate which comprises: hydrolyzing a titanium sulfate solution by heating to form colloidal δ titanium dioxide hydrate, said solution containing up to 150 g/l TiO_2, and having a molar ratio of TiO_2 to free sulphuric acid between 1:1 and 1:2, and a bivalent iron content between 0 and 1 gram Fe per gram TiO_2; removing the colloidal δ titanium dioxide hydrate by flocculation by the adding of a monobasic acid or its salt; and separating the flocculated δ titanium dioxide hydrate from the solution.

4,268,423

SUPPORT MATRICES FOR IMMOBILIZED ENZYMES

Ronald P. Rohrbach, Forest Lake, and Mary Maliarik, Lake Forest, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Nov. 16, 1979, Ser. No. 95,019

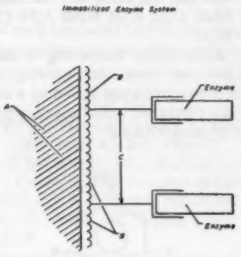
Int. Cl.[3] **B01J** *31/06;* **C12N** *11/14, 11/08*

U.S. Cl. 252—430 **7 Claims**

1. A method of preparing a support matrix useful for immobilization of an enzymatic material which comprises depositing a polyamine to an inorganic oxide support via a solution containing at least 5% by weight of polyamine per weight of said support wherein said addition of said polyamine is performed in the presence of an aqueous solution of a surfactant selected from the group consisting of cationic and nonionic surfactants having a surface tension of less than 30 dynes per centimeter to produce a polyamine coated-support, removing excess polyamine from said support, and contacting said polyamine-coated support with a solution containing an excess of a bifunctional monomeric material to provide a cross-linkage of said bifunctional monomer with said polyamine of said polyamine-coated support to produce said support matrix.

2. The method of claim 1 wherein the support matrix is comprised of an inorganic oxide support to which is attached a polyamine binding layer, a pendant functional group anchored at the non-functional end to said binding layer, and wherein said functional group is capable of covalently bonding to enzymes.

7. The method of claim 1 wherein said enzyme is selected



from the group consisting of glucose isomerase, glucoamylase, cholesteroloxidase, alcohol dehydrogenase, amino acid oxidase, arginase, asparaginase, catalase, chymotrypsin, cellulase, collagenase, deoxyribonuclease, ficin, histidase, lactase, peroxidase, lysozyme, gamma amylase, papain, rennin, ribonuclease and urease.

4,268,424

DETERGENT BARS CONTAINING DI-, HYDROXY AND/OR AMINO-CARBOXYLIC ACID MOISTURIZERS

Norman Hall, Wirral; Alexander Martin, Warrington, and Alan D. Tomlinson, Neston, all of England, assignors to Lever Brothers Company, New York, N.Y.

Continuation of Ser. No. 953,338, Oct. 20, 1978, abandoned, which is a continuation of Ser. No. 858,123, Dec. 6, 1977, abandoned, which is a continuation of Ser. No. 731,171, Oct. 12, 1976, abandoned, which is a continuation of Ser. No. 432,120, Jan. 9, 1974, abandoned. This application Oct. 30, 1979, Ser. No. 89,681

Claims priority, application United Kingdom, Jan. 15, 1973, 1994/73; Jul. 25, 1973, 35528/73

Int. Cl.[1] **C11D** *3/33, 3/20, 17/00*

U.S. Cl. 252—546 **4 Claims**

1. A detergent bar for increasing the water retention properties of skin containing

(a) from about 20% to about 55% by weight of a moisturizing component selected from the group consisting of:

(i) dicarboxylic acids of the formula:

COOH—R—COOH

and the water soluble salts thereof, wherein R is a hydrocarbon chain containing from 2 to 8 carbon atoms and is branched or unbranched, and saturated or unsaturated;

(ii) the hydroxy acids tartaric acid, citric acid, acetonic acid, glycollic acid and malic acid

and the water soluble salts thereof;

(iii) amino acids of the formula:

$R_3R_4C(NH_2)COOH$

in which R_3 and R_4 are each hydrogen, alkyl, hydroxyalkyl, $—CH_2COOH$, amino-alkyl, or the water soluble salts thereof, the alkyl in each of said groups having 1 to 4 carbon atoms; and wherein the hydrocarbon chain is branched or unbranched, and saturated or unsaturated; and

(iv) mixtures of the compounds defined in paragraphs i, ii or iii, and

(b) from about 45% to about 80% by weight of an anionic, cationic, nonionic or amphoteric detergent active material for use in said detergent bar.

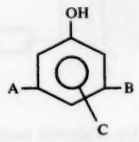
4,268,425

PHENOLIC RESIN-POLYISOCYANATE BINDER SYSTEMS CONTAINING A DRYING OIL AND USE THEREOF

John J. Gardikes, Worthington, Ohio, assignor to Ashland Oil, Inc., Ashland, Ky.

Filed May 14, 1979, Ser. No. 39,016
Int. Cl.[3] B22C 1/22, 9/02; B28B 7/34; C08L 91/00
U.S. Cl. 260—19 A 27 Claims

1. A binder composition comprising in admixture a resin component, a hardener component, a curing component and a drying oil; said resin component including a non-aqueous phenolic resin which comprises a condensation product of a phenol having the general formula:



wherein A, B and C are hydrogen, hydrocarbon radicals, or halogen, with an aldehyde having the general formula R'CHO wherein R' is a hydrogen or a hydrocarbon radical of 1 to 8 carbon atoms; said hardener component comprising liquid polyisocyanate containing at least two isocyanate groups, and said drying oil is selected from the group of ester of ethylenically unsaturated fatty acid, heat bodied modification thereof, air-blown modification thereof, oxygen-blown modification thereof, or mixtures thereof.

4,268,426

WATER-DISPERSIBLE URETHANE POLYMERS, AQUEOUS POLYMER DISPERSIONS AND HALF-ESTERS USEFUL THEREIN

Roy C. Williams, East Amherst, and David R. Rogemoser, Tonawanda, both of N.Y., assignors to Textron, Inc., Providence, R.I.

Continuation-in-part of Ser. No. 36,506, May 7, 1979, abandoned. This application Jun. 1, 1979, Ser. No. 44,674
Int. Cl.[3] C08G 18/48; C09D 3/72
U.S. Cl. 260—22 TN 64 Claims

1. A carboxylic group-containing, isocyanate-terminated urethane comprising the reaction product of hydrocarbon diisocyanate and urethane-forming polyol in which a substantial amount of the reacted hydroxyl functionality is provided by a carboxylic group-containing, half-ester of anhydride of a polycarboxylic acid selected from the group consisting of aromatic carboxylic acids having at least three carboxylic acid groups and aliphatic dicarboxylic acids of 4 to 5 carbon atoms, and a diol in which the hydroxy groups are primary and secondary or tertiary, or are secondary and tertiary, and when primary and secondary, the secondary hydroxyl group is attached to at least one tertiary or quaternary carbon atom.

4,268,427

PROCESS FOR PRODUCING NOVEL MODIFIED RESIN

Akinori Miyaguchi, Yokohama; Yasuomi Morita, Samukawa, and Yasuyoshi Chino, Yokohama, all of Japan, assignors to Nippon Zeon Co. Ltd. and Morimura Chemetron Ltd., both of Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,199
Claims priority, application Japan, Oct. 6, 1978, 53-123229
Int. Cl.[3] C09D 3/727, 3/733, 11/10
U.S. Cl. 260—23.7 C 14 Claims

1. A process for producing a modified resin, which comprises reacting

(I) the reaction product of 98 to 35% by weight of a cyclopentadiene resin, 2 to 65% by weight of a higher fatty acid ester having a conjugated double bond and 0 to 30% by weight of an α,β-unsaturated dicarboxylic acid anhydride, with

(II) at least one vinyl monomer selected from the group consisting of vinyl aromatic compounds and unsaturated monocarboxylic acid esters.

4,268,428

ASPHALTIC MATERIAL AND METHOD

Robert R. Green, 3306 NW. Oakcrest Dr., Kansas City, Mo. 64151

Filed Jul. 12, 1979, Ser. No. 56,865
Int. Cl.[3] C08L 91/00
U.S. Cl. 260—28.5 AS 8 Claims

1. An asphalt material for use with concrete or the like, comprising:

from about 50 to 95% by weight of an aqueous asphaltic emulsion; and

respective quantities of a vinyl acetate-acrylic copolymer and a latex having chloroprene as the primary monomer therein and having a solids content of from 40 to 60%, said respective quantities together totaling from about 5 to 50% by weight of the material,

said copolymer and latex serving to give the asphalt material a degree of resiliency for sealing purposes.

4,268,429

NOVEL FLAME RETARDANT POLYCARBONATE COMPOSITIONS

Jimmy L. Webb, Ballston Lake, N.Y., and Joseph B. Williams, Mt. Vernon, Ind., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 18, 1975, Ser. No. 597,005
Int. Cl.[3] C08K 3/30, 5/02, 5/06
U.S. Cl. 260—37 PC 10 Claims

1. A polycarbonate comprising an aromatic polycarbonate and a flame retardant additive combination consisting of a halogenated organic compound and an alkali or alkaline earth metal salt of an inorganic sulfite, thiosulfate, dithionite, or a pyrosulfite, and mixtures thereof.

4,268,430

FERRITE COMPOSITION HAVING HIGHER INITIAL PERMEABILITY AND PROCESS FOR PREPARING MOLDING PRODUCT THEREFROM

Kazuo Suzuki, and Kenichi Yokota, both of Otsu, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 28, 1980, Ser. No. 115,702
Claims priority, application Japan, Jan. 31, 1979, 54-10620
Int. Cl.[3] C08L 81/00
U.S. Cl. 260—37 R 7 Claims

1. A composition consisting essentially of 92% to 99% by weight of a spinel ferrite and 8% to 1% by weight of a polyphenylene sulfide.

4,268,431

COLORANT-THICKENER DISPERSIONS FOR UNSATURATED POLYESTER RESIN COMPOSITIONS

Martin L. Feldman, East Brunswick, and James T. De Groff, Oldwick, both of N.J., assignors to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Jun. 1, 1979, Ser. No. 44,724
Int. Cl.[3] C08K 3/20; C08L 67/06
U.S. Cl. 260—40 R 14 Claims

1. A colorant-thickener dispersion for unsaturated polyester resin compositions that comprises

(a) 20% to 50% by weight of a thickener comprising a Group II-A metal oxide or hydroxide,

(b) 5% to 20% by weight of a pigment component, and

(c) 30% to 75% by weight of an unsaturated polyester vehicle that comprises

(1) 80% to 98% by weight of at least one unsaturated polyester that is the product of the reaction of a dicarboxylic acid component containing 80 to 90 mole % of at least one unsaturated aliphatic dicarboxylic acid having 4 to 8 carbon atoms and 10 to 20 mole % of at least one saturated aromatic dicarboxylic acid with an alcohol component containing 40 to 60 mole % of at least one glycol having 2 to 6 carbon atoms and 40 to 60 mole % of at least one monohydric alcohol having 6 to 12 carbon atoms, in the amount of 0.4 mole to 0.6 mole of the dicarboxylic acid component per mole of the alcohol component, and

(2) 2% to 20% by weight of an unsaturated monomer capable of reacting with said unsaturated polyester to form cross-linkages.

4,268,432

POLYAMIDE COMPOSITIONS

John Maslen, Hoddesdon, and Eric Nield, Watton-at-Stone, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 803,234, Jun. 3, 1977, abandoned. This application Jun. 15, 1979, Ser. No. 48,772

Claims priority, application United Kingdom, Jun. 21, 1976, 25641/76

Int. Cl.[3] **C08L** *77/00;* **C08K** *5/02, 5/03*

U.S. Cl. 260—45.75 B **13 Claims**

1. A polyamide masterbatch composition comprising at least 10%, based on the total weight of the composition, of a high molecular weight fibre forming polyamide with a melting point of 230° C. or below and at least 60%, based on the total weight of the composition, of fire retardant additives selected from the group consisting of halogenated fire retardant organic compounds and a mixture of halogenated fire retardant organic compounds and at least one synergist for the halogenated compounds.

4,268,433

1,2-POLYBUTADIENE COMPOSITIONS AND CURED FLAME RETARDED 1,2-POLYBUTADIENE RESIN MATERIALS

Norio Sawatari; Isao Watanabe, both of Kawasaki; Kazumasa Saito, Atsugi, and Katsura Adachi, Sagamihara, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Aug. 29, 1979, Ser. No. 70,609

Claims priority, application Japan, Aug. 29, 1978, 53-104455; Aug. 29, 1978, 53-105174; Mar. 24, 1979, 54-34913; Mar. 24, 1979, 54-34914; Mar. 24, 1979, 54-34917; Mar. 24, 1979, 54-34918

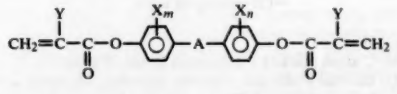
Int. Cl.[3] **C08L** *33/16, 9/00*

U.S. Cl. 525—193 **26 Claims**

1. A composition curable to a flame-retarded resin material, comprising:

(A) a polybutadiene polymer wherein at least 50% of the recurring units consist of 1,2-butadiene units;

(B) 40 to 200 parts by weight, based on 100 parts by weight of said butadiene polymer, of at least one reactive flame retardant selected from the group consisting of bisphenol bisacrylate compounds having the formula:



wherein X is Br or Cl, Y is H or $-CH_3$, m and n each is an integer from 1 through 4, and A is a direct bond, —O—, —CO—, $-SO_2-$, $-CH_2-_b$, wherein b is an integer from 1 through 4, —CH=CH— or

and

polymers of such bisphenol bisacrylate compounds, and;

(C) a curing-promoting amount of an organic peroxide.

4,268,434

IMMUNOSUPPRESSIVE EXTRACELLULAR PRODUCT FROM ORAL BACTERIA

Thomas B. Higerd, 922 Regatta Rd., Charleston, S.C. 29412, and Jean-Michel C. Goust, 29 27th Ave., Isle of Palms, S.C. 29451

Filed Jan. 9, 1979, Ser. No. 2,234

Int. Cl.[3] **A61K** *35/74;* **C12P** *21/00*

U.S. Cl. 260—112 R **17 Claims**

12. A proteinaceous extracellular product of *Streptococcus intermedius* having immunosuppressive activity, a molecular weight of about 160,000, as measured by gel filtration, an isoelectric point pI of about 4.8 and an ultraviolet absorption spectrum with a peak absorbance of 280 nm, said agent having inhibitory activity against fibroblastoid cells and against blast transformation of PHA-stimulated human lymphocytes.

4,268,435

CHORIONIC GONADOTROPIN DERIVED ANTIGEN FOR EARLY PREGNANCY TEST AND CONTRACEPTIVE VACCINE

Om P. Bahl, Williamsville, N.Y., assignor to Research Corporation, New York, N.Y.

Division of Ser. No. 875,497, Feb. 6, 1979, abandoned. This application Apr. 17, 1979, Ser. No. 30,772

Int. Cl.[3] **A61K** *35/50, 39/385, 39/395, 39/44*

U.S. Cl. 260—112 R **20 Claims**

1. A process for producing an antiserum which is generally selective in reactivity to human chorionic gonadotropin to a distinguishing degree from luteinizing hormone which comprises:

administering a first antigen to a host animal, wherein said first antigen has been produced by isolating the β-subunit of human chorionic gonadotropin, reducing the cleaving five of the intrachain disulfide bonds of said β-subunit, alkylating the thus reduced intrachain disulfide groups, and isolating the antigen produced thereby,

thereafter administering to the same said host animal, a second antigen produced in the same manner except that six intrachain disulfide groups were reduced and cleaved, and extracting an antiserum, produced by the administration of said first and second antigens, from said animal.

4,268,436

PROCESS FOR PREPARING DIAZONIUM SALTS OF 3-AMINO-PYRAZOLE

Giampiero Pieri, Saronno; Enzo Rosati, Seregno; Ruggero Battisti, Novara, and Giovanni Burei, Seregno, all of Italy, assignors to Aziende Colori Nazionali Affini Acna S.p.A., Milan, Italy

Filed May 23, 1979, Ser. No. 41,550

Claims priority, application Italy, May 24, 1978, 23725 A/78

Int. Cl.[3] **C07C** *107/00, 107/04, 107/08, 113/04*

U.S. Cl. 260—141 **5 Claims**

1. A process for preparing 3-diazopyrazole salts by oxidative diazotization of 3-aminopyrazolines, comprising treating said 3-aminopyrazolines with an oxidizing-diazotization agent selected from the group consisting of nitroxylsulphuric acid, alkaline metal nitrites, alkyl nitrites and isoalkyl nitrites, at a temperature from −10° C. to +20° C. in an acid medium.

4,268,437
CONTINUOUS DIAZOTIZATION OF AMINES

Hartmut Behringer, and Kurt Karrenbauer, both of Erftstadt, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 12, 1979, Ser. No. 47,698

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825655

Int. Cl.[3] **C07C** *113/04*

U.S. Cl. 260—141 **8 Claims**

1. In a process for the continuous diazotization of primary aromatic amines by reacting a suspension of the amine in aqueous mineral acid with an aqueous sodium nitrite solution, the improvement which comprises: supplying continuously the lower portion of a cylindrical diazotization zone placed in upright position with an aqueous mineral acid suspension of a diazotizable primary aromatic amine and supplying the vessel simultaneously, via one or more inlets arranged one above the other so as to open laterally thereinto, with an aqueous sodium nitrite solution, the amine and nitrite being used in stoichiometric proportions, or the nitrite being used in a stoichiometric deficiency and the acid being used in an excess of about 1 to 3 equivalents per amine equivalent in the mineral acid suspension; reacting the resulting mixture with agitation and cooling and while producing a laminar flow of liquid matter at temperatures of about 5° to 30° C., the reaction mixture resulting from readily diazotizable amines being allowed to remain in the diazotization zone over a period of about 1 to 10 minutes, and that resulting from difficultly diazotizable amines being allowed to remain in the diazotization zone over a period of about 10 to 30 minutes; removing reaction mixture, in accordance with the diazotization velocity of the particular amine used, from the upper portion of the diazotization zone at a place where the reaction mixture is substantially free from nitrous acid, said place being situated in said zone at a level which is the higher the lower the diazotization velocity of the amine used; filtering the reaction mixture removed and delivering diazonium salt-containing solution to a sojourn zone.

4,268,438
CATIONIC 1,3,4-THIADIAZOLE DYESTUFFS

Hauke Fürstenwerth, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

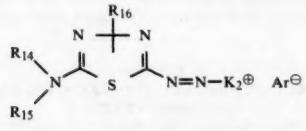
Filed Mar. 13, 1979, Ser. No. 20,161

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811258

Int. Cl.[3] **C09B** *29/22*

U.S. Cl. 260—158 **9 Claims**

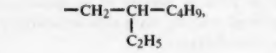
1. A cationic dyestuff of the formula



wherein

R_{14} denotes H, $-CH_3$, C_2H_5, $-C_3H_7$, iso$-C_3H_7$, $-C_4H_9$, iso$-C_4H_9$, sec.$-C_4H_9$, tert.$-C_4H_9$,

$-C_2H_4OH$, $-CH_2-CHOH-CH_3$, $-C_2H_4CN$, $-C_6H_{11}$, $-C_5H_9$, $-CH_2-C_6H_5$, $-C_6H_5$, $-C_6H_4$-Cl—(p), $C_6H_3Cl_2$—(2,5), $C_6H_4-CH_3$—(o, m or p), $-C_6H_4-OCH_3$—(p), $-C_2H_4-O-CH_3$, $C_2H_4-O-C_2H_5$,



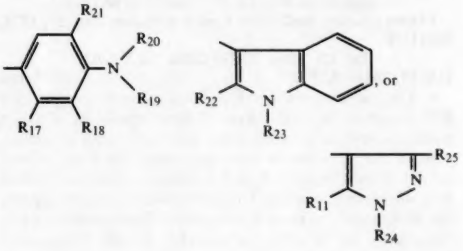
4—Cl—C_6H_4—CO,
4—CH_3—C_6H_4—CO, C_2H_5OCO-, CH_3OCO-, C_2H_5NHCO-, $(C_2H_5)_2NCO-$, $(C_2H_5)_2NSO_2-$, CH_3NHSO_2- or H_2NCO-,

R_{15} denotes $-CH_3$, $-C_2H_5$, $-C_3H_7$, iso$-C_3H_7$, $-C_4H_9$, iso$-C_4H_9$, sec.$-C_4H_9$, tert.$-C_4H_9$,

$-C_2H_4OH$, $-CH_2-CHOH-CH_3$, $-C_2H_4CN$, $-C_6H_{11}$, $-C_5H_9$, $-C_2H_4-O-CH_3$ or $-C_2H_4-O-C_2H_5$,

R_{16} denotes alkyl with 1–4 C atoms, 2-cyanoethyl, 2-carbamoylethyl, 2-hydroxyethyl or benzyl,

K_2 is a coupling component of the formula



wherein

R_{17} denotes hydrogen, methyl, ethyl, methoxy, ethoxy, chlorine or bromine,

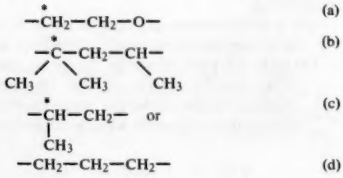
R_{18} denotes hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy or ethoxy,

R_{19} denotes hydrogen, alkyl with 1–4 C atoms, alkyl with 1–4 C atoms substituted by hydroxy or C_{1-4}-alkoxy, or benzyl and

R_{20} denotes hydrogen, alkyl with 1–4 C atoms, alkyl with 1–4 C atoms substituted by hydroxy or C_{1-4}-alkoxy, benzyl or phenyl, or

R_{19} and R_{20}, together with the N atom bonded to them, represent a saturated heterocyclic ring which can contain further hetero-atoms, or

R_{18} and R_{19} and/or R_{20} and R_{21} together form a radical of the formula



wherein

the C atom marked x is bonded to the N atom,

R_{21} denotes hydrogen, fluorine, chlorine, bromine, methyl, ethyl, methoxy or ethoxy

R_{22} denotes methyl, ethyl or phenyl,

R_{23} denotes hydrogen, methyl, β-cyanoethyl, β-carbamoylethyl and β-carboxyethyl,

R_{24} denotes hydrogen, methyl, ethyl, benzyl or phenyl

which is optionally substituted by chlorine, methyl, methoxy or nitro,

R_{25} denotes hydrogen, methyl, halogen, cyano or methoxycarbonyl, and

Anθ denotes an anion.

4,268,439

BASIC AZO DYESTUFFS HAVING BENZYLAMMONIUMAMINE SUBSTITUENT IN THE COUPLING COMPONENT

Winfried Kruckenberg, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

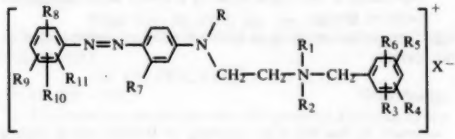
Continuation-in-part of Ser. No. 741,692, Nov. 15, 1976, abandoned, which is a continuation of Ser. No. 142,386, May 11, 1971, abandoned. This application Mar. 7, 1977, Ser. No. 775,053

Claims priority, application Fed. Rep. of Germany, May 16, 1970, 2024184; Aug. 21, 1970, 2041690

Int. Cl.[3] **C07C** *107/06;* **C09B** *44/02, 44/04*

U.S. Cl. 260—205 **13 Claims**

1. Azo dyestuffs which are free of sulfonic acid groups and carboxylic acid groups and correspond to the formula



in which

R stands for hydrogen, methyl, ethyl, n-propyl, iso-propyl or n-butyl;

R_1 is hydrogen, methyl or ethyl;

R_2 is methyl or ethyl;

R_3 is hydrogen, chlorine, bromine, nitro, methyl, ethyl, n-propyl, iso-propyl, n-butyl, tert.-butyl, methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy, benzyl or phenyl;

R_4 is hydrogen, chlorine, bromine, nitro, methyl, ethyl, n-propyl, iso-propyl, n-butyl, tert.-butyl, methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy, benzyl or phenyl;

R_5 is hydrogen, chlorine, bromine, nitro, methyl, ethyl, n-propyl, iso-propyl, n-butyl, tert.-butyl, methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy benzyl or phenyl;

R_6 is hydrogen, chlorine, bromine, nitro, methyl, ethyl, n-propyl, iso-propyl, n-butyl, tert.-butyl, methoxy, ethoxy, n-propoxy, iso-propoxy, n-butoxy, benzyl or phenyl;

R_7 is hydrogen or methyl;

R_8 is hydrogen, chlorine, bromine, cyano, nitro, carbomethoxy, methoxy, methyl or N,N-dimethylsulphamoyl;

R_9 is hydrogen, chlorine, bromine, cyano, nitro, carbomethoxy, methoxy, methyl or N,N-dimethylsulphamoyl;

R_{10} is hydrogen, chlorine, bromine, cyano, nitro, carbomethoxy, methoxy, methyl or N,N-dimethylsulphamoyl;

R_{11} is hydrogen, chlorine, bromine, cyano, nitro, carbomethoxy, methoxy, methyl or N,N-dimethylsulphamoyl; and

X^{31} is an anion.

4,268,440

PREPARATION OF CAPROLACTAM

Joachim Werther, Bobenheim-Roxheim; Hugo Fuchs, Ludwigshafen; Uwe Brand, Rosengarten, and Friedrich R. Faulhaber, Mutterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 13, 1980, Ser. No. 129,827

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915360

Int. Cl.[3] **C07D** *201/04*

U.S. Cl. 260—239.3 A **3 Claims**

1. A two-stage process for the preparation of caprolactam which comprises:

(a) heating cyclohexanone-oxime, in the presence of inert gases, in contact with a fluidized bed of inert solid particles at a temperature of from 180° to 220° C., in a first-stage to vaporize cyclohexanone-oxime;

(b) passing the vaporized cyclohexanone-oxime mixed with the inert gases to a second-stage, and

(c) heating the mixture of vaporized cyclohexanone-oxime and inert gases in contact with a fluidized bed of catalyst containing boron trioxide, to a temperature of from 230° to 450° C., to form caprolactam by re-arrangement in said second-stage.

4,268,441

PRODRUGS FOR IMPROVED BIOAVAILABILITY OF CERTAIN Δ^4-3-KETOSTEROIDAL SEX HORMONES

Nicholas S. Bodor, Gainesville, Fla., and Kenneth B. Sloan, Eudora, Kans., assignors to INTERx Research Corporation, Lawrence, Kans.

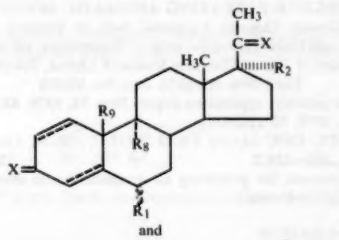
Continuation-in-part of Ser. No. 886,589, Mar. 14, 1978, abandoned. This application Jul. 13, 1979, Ser. No. 57,324

Claims priority, application Australia, Mar. 13, 1979, 45084/79; Canada, Mar. 13, 1979, 323352

Int. Cl.[3] **A61K** *31/58;* **C07J** *33/00*

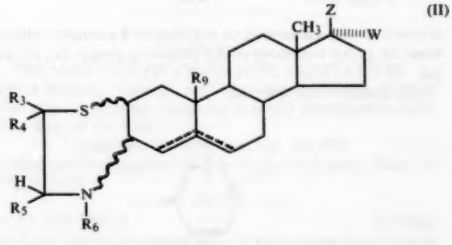
U.S. Cl. 260—239.5 **144 Claims**

1. A compound selected from the group consisting of compounds having the structural formulae:



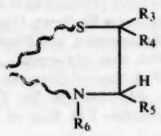
(I)

and



(II)

wherein each =X is =O or



with the proviso that both =X's cannot at the same time be =O, albeit either one or both can comprise the depicted thiazolidine nucleus;

R_1 is H, C_1–C_8 alkyl or halogen;

R_2 is H, OH, halogen, C_1–C_{10} alkyl or —$OCOR_7$ wherein R_7 is defined as below;

R_3 is H or C_1–C_8 alkyl;

R_4 is H or C_1–C_8 alkyl;

R_5 is H or —$COOR_7$ wherein R_7 is defined as below;

R_6 is H, —COR_7 or —$COOR_7$, with the proviso that, when R_6 is H, then the compound of formula (I) or (II) can also be in the form of a pharmaceutically acceptable acid addition salt;

R_7 is H, C_1–C_{20} alkyl, C_2–C_{20} alkenyl, C_5–C_7 cycloalkyl, C_5–C_7 cycloalkyl-C_6–C_{10} aryl, phenyl or C_1–C_4 alkylphenyl;

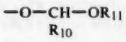
R_8 is H, Cl or F;

R_9 is H or C_1–C_8 alkyl;

R_{10} is H, C_1–C_8 alkyl, C_2–C_8 alkenyl, CCl_3, CBr_3, phenyl, C_6H_5—CH=CH— or substituted phenyl wherein the phenyl substituents are selected from the group consisting of lower alkyl, halo and lower alkoxy;

R_{11} is H or COR_7 wherein R_7 is defined as above;

Z is OH, $OCOR_7$ or



wherein R_7, R_{10} and R_{11} are defined as above;

W is H, C_1–C_{12} alkyl, C_2–C_8 alkenyl or C_2–C_8 alkynyl;

the dotted line at the 1(2)-position in formula (I) indicates the presence of a single or a double bond; and the dotted lines at the 4(5)- and 5(6)-positions indicate the presence of a double bond at either the 4(5)- or the 5(6)-position.

4,268,442

PROCESS FOR PREPARING AROMATIC ACETIC ACID

Kiyosi Kondo; Tamotsu Fujimoto, both of Yamato; Minoru Suda, and Daiei Tunemoto, both of Sagamihara, all of Japan, assignors to Sagami Chemical Research Center, Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,818

Claims priority, application Japan, Nov. 14, 1978, 53-139364; Nov. 14, 1978, 53-139365

Int. Cl.[3] **C07C** *53/132;* **C07D** *207/337, 307/54, 333/24*

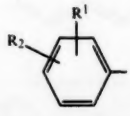
U.S. Cl. 260—326.2 **22 Claims**

1. A process for preparing an aromatic acetic acid represented by the formula

$ArCH_2COOH$

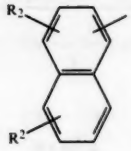
wherein Ar is a substituted or unsubstituted aromatic selected from the group consisting of the following groups (a), (b) and (c):

(a) a group of the formula



wherein R^1 and R^2 may be at the same or different and each represent a hydrogen atom, a lower alkyl group, a lower alkoxy group, a halogen atom, a phenoxy group, a benzyloxy group or R^1 and R^2 may cooperate to form a lower alkylidenedioxy group;

(b) a group of the formula:



wherein R^1 and R^2 are the same as defined above; and

(c) a group of the formula

A

wherein A represents an oxygen atom (O), a sulfur atom (S) or a $>NR^6$ group in which R^6 is a hydrogen atom or a lower alkyl group having 1 to 4 carbon atoms, and R^3 represents a hydrogen atom or a lower alkyl substituted benzoyl group;

which comprises reacting an aromatic aldehyde represented by the formula

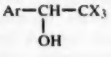
$ArCHO$

wherein Ar has the same meaning as defined above, with a trihalomethane represented by the formula

HCX_3

wherein X represents at least one halogen selected from the group consisting of chlorine and bromine atoms,

in the presence of a base in a mixed medium of water and an aprotic polar solvent to form an alcohol derivative represented by the formula



wherein Ar has the same medium as defined above,

and then reacting the thus formed alcohol derivative with an alkanethiol represented by the formula

RSH

wherein R is an alkyl group,

in the presence of a base in a mixed medium of water and an aprotic polar solvent, wherein the volume ratio of said water and said aprotic polar solvent is 1:0.2–1:5.

4,268,443

13,15-DIOXABICYCLO[10.5.0]HEPTADECANES, THEIR PREPARATION, AND THEIR USE IN PERFUME COMPOSITIONS AND AS AN ODORANT

Klaus Bruns, Krefeld-Traar, and Peter Meins, Mettmann, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Düsseldorf-Holthausen, Fed. Rep. of Germany

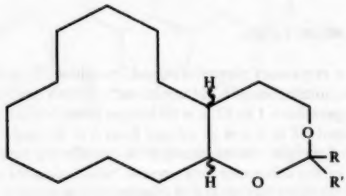
Filed Jun. 14, 1979, Ser. No. 48,504

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827979

Int. Cl.[3] C07D *319/08*

U.S. Cl. 260—340.3 2 Claims

1. A 13,15-dioxabicyclo[10.5.0]heptadecane of the formula



wherein R and R^1 are independently hydrogen or a methyl radical.

4,268,444

PREPARATION OF POLYENE-ALDEHYDES

Hagen Jaedicke, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

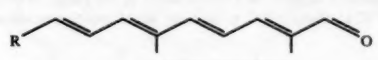
Filed Nov. 16, 1979, Ser. No. 94,986

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1978, 2851051

Int. Cl.[3] C07C *45/45;* C07D *319/04*

U.S. Cl. 260—340.7 5 Claims

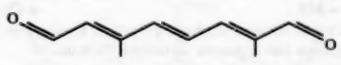
1. A process for the preparation of a polyene-aldehyde of the formula I:



(I)

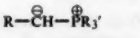
where R is selected from the group consisting of a saturated or unsaturated C_1C_{40} hydrocarbon,, and a radical having the carbon skeleton of vitamin A or fragments thereof, which radical may or may not be substituted by methyl, ethyl and ether groups, may or may not be conjugated throughout, and may be unsaturated or partially or completely saturated; which comprises:

reacting 2,6-dimethyl-octa-2,4,6-triene-1,8-dial of the formula



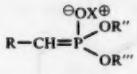
(II)

with an equimolar or about equimolar amount of a compound selected from the group consisting of an ylide of the formula III:



(III)

and a compound of the formula IV:



(IV)

wherein

R', R" and R" are the same or different alkyl, cycloalkyl, aralkyl or aryl radicals;

and X^+ is the cationic component of a strong base.

4,268,445

PREPARATION OF BICYCLIC ENOL-ETHERS, AND NOVEL ETHERS OF 2-(3-HYDROXYPROP-L-YL)-CYCLOALKANONES

Rudolf Kropp, Limburgerhof; Frank Thoemel, Weinheim; Axel Nuerrenbach, Gruenstadt; Werner Hoffman, Neuhofen; Franz Wenisch, Frankenthal, and Hartwig Fuchs, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

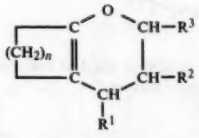
Filed Jan. 31, 1980, Ser. No. 117,128

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1979, 2906296

Int. Cl.[3] C07D *311/44, 311/94*

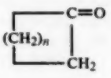
U.S. Cl. 260—345.2 1 Claim

1. A process for the preparation of a bicyclic enol-ether of the general formula (I)



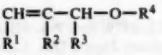
(I)

where n is from 3 to 12 and R^1, R^2 and R^3 are hydrogen or C_1-C_4-alkyl, by free radical adduct formation of an allyl compound with a cyclic ketone of the general formula (IV)



(IV)

and subsequent acid-catalyzed cyclization to give (I), wherein the allyl compound used is an allyl ether of the general formula (III)



(III)

where R^4 is tert.-butyl, tetrahydrofuran-2-yl or tetrahydropyran-2-yl.

4,268,446

PREPARATION OF CHROMANE DERIVATIVES

Michael Horner, Neustadt, and Axel Nissen, Leimen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

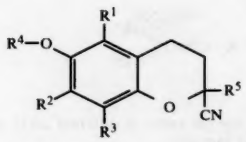
Filed Feb. 13, 1980, Ser. No. 121,170

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1979, 2909601

Int. Cl.[3] C07D *311/58*

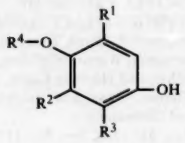
U.S. Cl. 260—345.5 3 Claims

1. A process for the preparation of a chromane derivative of the formula I



I

where R^1, R^2 and R^3 are hydrogen or alkyl of 1 to 8 carbon atoms, R^4 is hydrogen or alkyl or acyl of 1 to 8 carbon atoms and R^5 is alkyl of 1 to 8 carbon atoms, which comprises: reacting a hydroquinone of the formula II



with 10–300 mole %, based on II, of a Lewis acid or of a Lewis acid adduct with a weak Lewis base or of a Lewis acid adduct with a proton acid, and with a nitrile of the formula III

III

where R^6 is hydrogen or acyl or alkyl of 1 to 4 carbon atoms, in the presence of an inert solvent.

4,268,447

PROCESS FOR PRODUCING TETRAHYDROFURAN AND 1,4-BUTANEDIOL

Yoshinori Yoshida, Yokohama, and Hiroshi Oka, Tokyo, both of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 102,658

Claims priority, application Japan, Dec. 12, 1978, 53/152724

Int. Cl.[3] **C07D** *307/08;* **C07C** *31/20*

U.S. Cl. 260—346.11 **15 Claims**

1. A process for producing simultaneously tetrahydrofuran and 1,4-butanediol at any desired proportion which comprises (a) reacting the diacetic ester of 1,4-butanediol with a theoretical or smaller quantity, based on said diacetic ester, of water in the presence of an acidic catalyst, (b) separating, in a first distillation column, the reaction mixture obtained into a distillate comprising tetrahydrofuran as major constituent and a bottom stream comprising the diacetic ester of 1,4-butanediol as major constituent, and (c) subjecting, in the second reaction-distillation column, at least a part of said bottom stream to a counter-current gas-liquid contact reaction with methanol in the presence of an acidic or basic catalyst and separating the reaction mixture into a bottom stream comprising 1,4-butanediol as major constituent and a distillate comprising methyl acetate as major constituent.

4,268,448

PROCESS FOR THE PRODUCTION OF MALEIC ANHYDRIDE

Gerhard Franz; Franz Nierlich, and Hans-Josef Ratajczak, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Jan. 22, 1980, Ser. No. 114,448

Claims priority, application Fed. Rep. of Germany, Jan. 26, 1979, 2902986

Int. Cl.[3] **C07D** *307/60*

U.S. Cl. 260—346.75 **6 Claims**

1. In a process for the production of maleic anhydride by the high temperature catalyzed oxidation of ethylenically unsaturated n-C_4-hydrocarbons with an oxygen-containing gas, the improvement wherein the catalyst is a compound of the formula

$$W_aMo_bSb_cY_dX_eO_x$$

wherein y represents phosphorus and/or silicon; X is at least one of vanadium, bismuth, tellurium and an alkali metal; a and b are integers from 1 to 12; c is an integer from 2 to 20; d is an integer from 0.2 to 2; e is an integer from 0 to 10; and x is the number of oxygen atoms required to satisfy the remaining valences of the other elements present, which catalyst is produced by mixing a compound of trivalent antimony and, when e is other than 0, at least one of a vanadium, bismuth, tellurium and alkali metal compound, with a solution of a mixture of the heteropoly acids of molybdenum and of tungsten to form a blue, gel-like precursor, drying, and then calcining.

4,268,449

METHOD FOR THE PREPARATION OF FURAN-2-CARBOXYLIC ACID AMIDE AND THE CORRESPONDING FURAN-2-CARBOXYLIC ACID

Gerhard O. Kuehnhanss, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Feb. 22, 1980, Ser. No. 123,809

Int. Cl.[3] **C07D** *307/54*

U.S. Cl. 260—347.3 **8 Claims**

1. A method for the preparation of furan-2-carboxylic acid-amide which comprises contacting carbamoyl chloride and furan without a catalyst at a temperature in the range of from about 10° C. to about 30° C. in an inert, liquid reaction medium.

4,268,450

ENERGETIC HYDROXY-TERMINATED AZIDO POLYMER

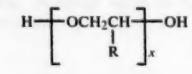
Milton B. Frankel, Tarzana, and Joseph E. Flanagan, Woodland Hills, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 822,490, Aug. 8, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 4,978

Int. Cl.[3] **C07C** *117/00;* **C08G** *65/32, 65/22, 65/24*

U.S. Cl. 260—349 **4 Claims**

1. A hydroxy-terminated aliphatic polyether having pendant alkyl azide groups has a general structural formula of:



wherein x is an integer from 10 to 60 and wherein R is selected from the group consisting of $-(CH_2)_nN_3$, and $-CH_2CHN_3CH_2N_3$, and wherein n is an integer from 1 to 5.

4,268,451

DAUNOMYCIN DERIVATIVES, THEIR AGLYCONES AND THE USE THEREOF

Paolo Masi; Antonino Suarato; Luigi Bernardi, and Federico Arcamone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

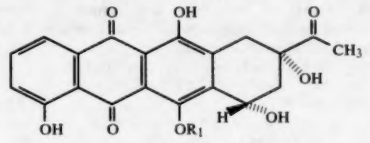
Division of Ser. No. 901,359, May 1, 1978, Pat. No. 4,191,756. This application May 14, 1979, Ser. No. 38,688

Claims priority, application United Kingdom, May 5, 1977, 18777/77

Int. Cl.³ C07C *50/16*

U.S. Cl. 260—376 2 Claims

1. A compound of the formula II:

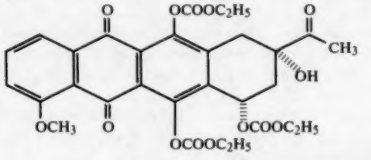


II

wherein R_1 is a lower alkyl group having from 1 to 4 carbon atoms.

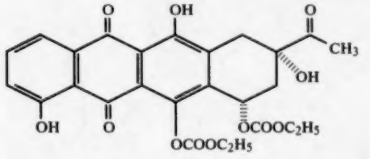
2. A process for the preparation of aglycones of daunomycin comprising:

(a) reacting a compound of the formula:



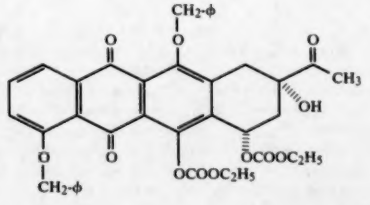
(IV)

with aluminum trichloride in an organic solvent selected from the group consisting of dichloromethane and chloroform to yield the bis-phenolic compound of the formula:



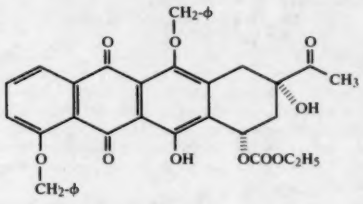
(V)

(b) reacting the compound of Formula V with a benzyl halide in the presence of a base selected from the group consisting of silver oxide and potassium carbonate in an organic solvent at a temperature of from about 20° C. to about 100° C. to yield a dibenzylic compound of the formula:



(VI)

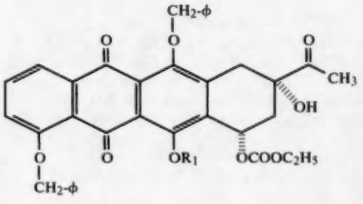
(c) treating the compound of Formula VI with alkaline hydroxide or an activated basic resin in a solvent selected from the group consisting of water and alcohol to yield the monophenolic compound of the formula:



(VII)

wherein R_2 is hydrogen when the reaction is carried out in aqueous medium and an alkyl group when the solvent is alcohol;

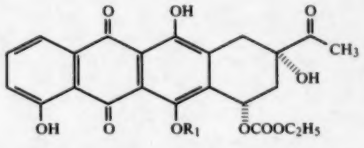
(d) reacting the compound of Formula VII wherein R_2 is an alkyl group with a halide of the general formula R_1—Y, wherein R_1 is a lower alkyl having 1 to 4 carbon atoms and Y is selected from the group consisting Cl, Br or I; in a boiling organic solvent selected from the group consisting of dichloromethane, chloroform and dichloroethane in the presence of a base selected from the group consisting of silver oxide and potassium carbonate to yield the ether of the formula:



(VIII)

wherein R_1 and R_2 are as described above;

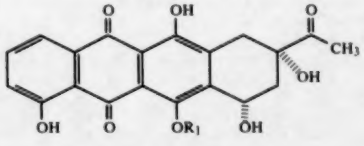
(e) treating the compound of Formula VIII with trifluoroacetic acid at room temperature to yield the bis-phenolic compound of the formula:



(IX)

wherein R_1 and R_2 are as described above; and

(f) hydrolizing the compound of Formula IX in boiling aqueous trifluoroacetic acid to yield the compound of the formula:



(II)

wherein R_1 is as defined above.

4,268,452
NONCURABLE SEALING MATERIALS

Katsutoshi Mine, Ichihara; Yoshitaka Kubota, Chiba, and Tsuneo Maruyama, Ichihara, all of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 128,604
Int. Cl.³ C08L *83/04*
U.S. Cl. 260—37 SB **18 Claims**

1. A noncurable sealing material comprising a composition which increases in viscosity on contact with moisture, does not cure and substantially maintains its initial viscosity when stored in a container which does not substantially allow moisture to penetrate, consisting essentially of a product obtained by mixing the following ingredients under substantially anhydrous conditions

(a) 100 parts by weight of a polydiorganosiloxane having silicon-atom-bonded hydroxyl groups at the terminus of the molecular chains, the organic groups of the polydiorganosiloxane being substituted or unsubstituted monovalent hydrocarbon radicals and said polydiorganosiloxane having a viscosity of 0.5 m^2/s or less at 25° C.,

(b) from 1 to 500 parts by weight of a filler and

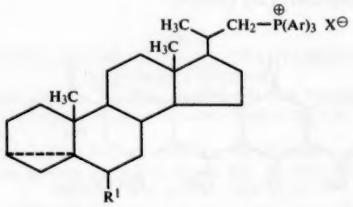
(c) an amount of an organosilicon compound sufficient to supply silicon-bonded nitrogen groups or groups having silicon-oxygen-nitrogen bonds in at least the same molar amount as the total molar amount of silicon-atom-bonded hydroxyl groups in (a), said organosilicon compound having two moisture hydrolyzable groups per molecule and said groups being selected from the group consisting of silicon-bonded nitrogen groups and groups having silicon-oxygen-nitrogen bonds.

4,268,453
PROCESS FOR THE MANUFACTURE OF CHOLESTENE DERIVATIVES AND NOVEL INTERMEDIATES IN THEIR MANUFACTURE

Richard Barner, Witterswil, and Josef Hübscher, Seon, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed May 5, 1980, Ser. No. 146,880
Claims priority, application Switzerland, May 18, 1979, 4676/79
Int. Cl.³ C07J *1/00*
U.S. Cl. 260—397.5 **2 Claims**

1. Compounds of the general formula



wherein R^1 is lower alkoxy; Ar is aryl; and $X^\ominus$ is an anion.

4,268,454
ANIONIC GROUP VIII METAL HYDRIDE CATALYSTS

Guido P. Pez, Boonton, and Roger A. Grey, Denville, both of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 972,147, Dec. 21, 1978, abandoned. This application Aug. 29, 1979, Ser. No. 70,583
Int. Cl.³ C07F *15/02, 15/00*
U.S. Cl. 260—439 R **11 Claims**

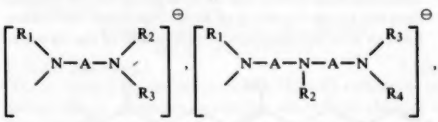
1. Anionic Group VIII metal hydride complex having 1 to 3 ligands per Group VIII metal atom, all ligands being selected from triphenyl phosphine, diphenyl phosphide, and methyldiphenylphosphine; wherein the Group VIII metal is an element selected from the first and second transition series; and the charge of the complex anion is neutralized by cations selected from Group IA and Group IIA metals.

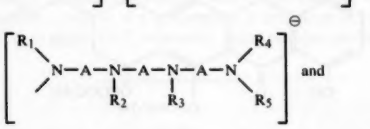
4,268,455
CHELATING TERTIARY AMINO METAL AMIDES

Arthur W. Langer, Jr., Watchung, and Thomas A. Whitney, Roselle, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

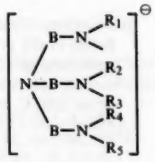
Filed Aug. 12, 1976, Ser. No. 713,902
Int. Cl.³ C07F *5/06*
U.S. Cl. 260—448 R **21 Claims**

2. Chelating tertiary amino metal amides selected from the group consisting of $[Chel\ N]^\ominus M^\oplus$ and $[Chel\ N]^\ominus M^\oplus M'H_mR_nX_p$ wherein M is a Group IA metal, M' is a metal selected from the group consisting of lithium, sodium, magnesium, beryllium, zinc, cadmium, boron, aluminum, gallium, indium, zirconium, titanium, tin and copper, and m and n equal 0 to 4, p equals 0 to 3 and $(m+n+p)$ equals the valence of M' and $(m+n)$ equals at least 1 and X is a nonreactive group selected from the group consisting of chlorine, bromine, iodine, C_1–C_{20} alkoxide, C_1–C_{20} thioalkoxide, C_2–C_{40} hydrocarbyl secondary amide and C_2 to C_{40} hydrocarbyl secondary phosphide, R is a hydrocarbyl group selected from the group consisting of C_1–C_{30} alkyl, C_6–C_{30} aryl, C_7–C_{30} aralkyl, C_3 to C_{30} naphthenic, C_2 to C_{30} alkenyl, C_2–C_{30} alkynyl and cyclopentadienyl; Z is selected from the group consisting of R, X or H and $[Chel\ N]^\ominus$ is selected from the group consisting of compounds of the formulae:





and



wherein R_1 is a C_1 to C_{20} hydrocarbyl radical, R_2, R_3, R_4 and R_5 are the same or different alkyl or aryl radicals of 1 to 7 carbon atoms inclusive, A is selected from the group consisting of a nonreactive group containing 2 to 3 methylenic radicals having 0 to 6 monovalent substituents containing 1 to 10 carbon atoms or a cycloaliphatic radical and their lower alkyl or naphthenic derivatives having ring structures containing 5 to 7 members wherein said radicals are attached to the nitrogen atoms at adjacent positions on the rings and B is selected from the group consisting of a nonreactive group containing 2 to 3 methylenic radicals having 0 to 3 monovalent substituents containing 1 to 10 carbon atoms.

4,268,456
PROCESS FOR PREPARING CHLOROTHIOLFORMATES

William A. Keim, and James A. Cook, Jr., both of Barberton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 24, 1979, Ser. No. 78,328
Int. Cl.³ C07C *154/00*
U.S. Cl. 260—455 R **17 Claims**

1. In the process of preparing organic chlorothiolformate by reaction of an organic mercaptan having the formula R'—SH with phosgene, wherein R' is alkyl, cycloalkyl, cycloalkylmethyl, lower alkenyl, aryl, alkaryl, aralkyl, haloaryl, haloaralkyl, carboalkoxy alkyl, the improvement which comprises conducting said reaction in the presence of a catalytic amount of a quaternary ammonium salt of the formula:

$$(R_1R_2R_3R_4N)^+X^-$$

wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of C_1–C_{22} alkyl, C_2–C_8 alkenyl, phenyl, C_6–C_9 alkaryl, and C_6–C_9 aralkyl, and X is a monovalent anion normally associated with quaternary ammonium salts.

4,268,457
PROCESS FOR THE PREPARATION OF PARAPHENOXYBENZOYLCHLORIDE

James G. Colson, Williamsville; Victor F. G. Cooke, Youngstown; F. Howard Day, and Michael J. Fifolt, both of Grand Island, all of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Jun. 28, 1979, Ser. No. 52,712
Int. Cl.³ C07C *51/093, 41/22, 43/275*
U.S. Cl. 260—544 P **17 Claims**

1. p-phenoxybenzotrichloride.

2. A process for the preparation of p-phenoxybenzoylchloride which comprises reacting p-phenoxybenzotrichloride with a hydrolyzing reactant selected from water, aqueous mineral acids, carboxylic acids, sulfonic acids, mixtures of lewis acids with water or carboxylic acids and mixtures thereof.

15. A process for the preparation of p-phenoxybenzoylchloride which comprises reacting p-phenoxytoluene with chlorine in the presence of actinic light to produce a product containing p-phenoxybenzotrichloride and thereover hydrolyzing said p-phenoxybenzotrichloride with a hydrolysis reactant selected from water, aqueous mineral acid, carboxylic acid, mixtures of lewis acids with water or carboxylic acids and mixtures thereof to produce a p-phenoxybenzoyl chloride product.

4,268,458
PROCESS FOR THE PREPARATION OF N-ALKYLATED AROMATIC AMINES

Werner Schulte-Huermann, and Heinz P. Hemmerich, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 16, 1980, Ser. No. 140,913
Claims priority, application Fed. Rep. of Germany, May 4, 1979, 2918023
Int. Cl.³ C07C *85/06*
U.S. Cl. 564—305 **6 Claims**

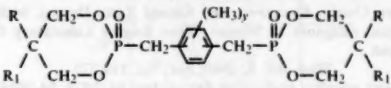
1. In a process for the preparation of an N-alkylated aromatic amine by contacting an aromatic amine with an aliphatic or cycloaliphatic alcohol at an elevated temperature and under increased pressure, in the presence of catalysts, the improvement wherein the reaction is carried out in the presence of a phosphorus oxyhalide.

4,268,459
CYCLIC DIPHOSPHONATES

Joseph A. Hoffman, Bridgewater, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 700,996, Jun. 29, 1976, abandoned. This application Sep. 28, 1979, Ser. No. 79,689
Int. Cl.³ C07F *9/15*; C08K *5/53*
U.S. Cl. 260—927 R **7 Claims**

1. A compound having the formula

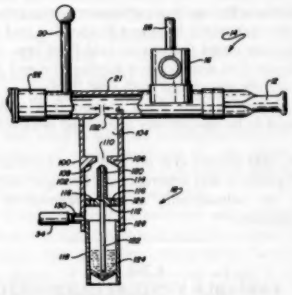


wherein R is hydrogen or methyl; R_1 is hydrogen, methyl, or ethyl; and y is an integer from 0 to 2 inclusive.

4,268,460
NEBULIZER

Anthony A. Boiarski, Columbus, and Ross G. Luce, Westerville, both of Ohio, assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation of Ser. No. 860,006, Dec. 12, 1977, abandoned. This application Mar. 5, 1980, Ser. No. 127,350
Int. Cl.³ A61M *11/02*
U.S. Cl. 261—1 **10 Claims**



1. Nebulizer apparatus, connectable with a source of gas and with a liquid source comprising:

a first atomizer stage chamber for simultaneously communicating with a source of pressurized gas and with said source of liquid for forming by the Bernoulli effect a first particulate dispersion of said liquid entrained with said gas, the liquid particles of said first particulate dispersion exhibiting an average diameter, D_1, and a surface tension, S, and said gas exhibiting a density ρg;

a containment chamber embodying a second atomizer stage communicating through an input aperture narrower than the chamber with said first atomizer stage and having an input zone for receiving said first particulate dispersion at a stagnation pressure, P_o, and including a knife-edge exit orifice having diameter, d_o, to effect the expulsion through said exit orifice of said first particulate dispersion to impart supersonic velocities to said gas under flow conditions according to the expression:

$$\rho_g u_r^2 \cong W_e S/D_f, \text{ where}$$

u_r is the relative velocity between a given said liquid particle and the velocity of said gas, and W_e is Weber number of value effective to effect a breakdown of said liquid particles to form a second gas entrained particulate dispersion of said liquid having an average particle diameter, D_S, less than said diameter, D_f, and

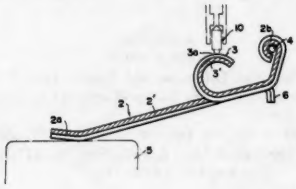
a flexible tube communicating at one end with a source of gas under relatively low positive pressure, at the other end with a mouthpiece, and between the ends with said exit orifice whereby the second gas entrained particulate dispersion and low positive pressure gas are delivered to the mouthpiece.

4,268,461

TEMPERATURE COMPENSATING FLOAT ARM FOR USE IN CARBURETORS

Shigeru Onishi, Kanazawa, and Satoshi Kato, Ibaragi, both of Japan, assignors to Nippon Clean Engine Laboratory Co., Japan

Filed Jan. 8, 1980, Ser. No. 110,370
Claims priority, application Japan, Jan. 14, 1979, 54-3486[U]
Int. Cl.³ F02M *5/12*
U.S. Cl. 261—39 B **4 Claims**



1. A float arm for use in a carburetor for internal combustion engines, the carburetor having a float valve and a float operatively interconnected thereto by said float arm, comprising:

an elongate first arm portion having one end adapted to be operatively associated with said float;

a second arm portion fixed to said first arm portion and adapted to be operatively associated with said float valve; and

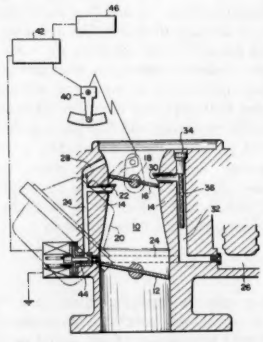
wherein said second arm portion has a substantially arcuate configuration and wherein said first and second arm portions are substantially entirely formed of a bimetallic construction.

4,268,462

VARIABLE VENTURI CARBURETOR

Tadaki Ota; Katsushi Yoshikawa, both of Yokohama, and Masaaki Saito, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jan. 8, 1980, Ser. No. 110,440
Claims priority, application Japan, Jan. 18, 1979, 54-4904[U]
Int. Cl.³ F02M *7/22*
U.S. Cl. 261—40 **4 Claims**



1. A variable venturi carburetor comprising a fuel reservoir, a through passage-way mixture conduit (**10**), a throttle plate (**12**) swingably disposed for opening and closing the outlet end of said mixture conduit (**10**) and thereby metering the amount of mixture that exits from said mixture conduit (**10**), said mixture conduit (**10**) formed with a fixed venturi (**14**) upstream of said throttle plate (**12**), a vacuum sustaining plate (**16**) swingably disposed for opening and closing the throat of said fixed venturi (**14**) for controlling admission of air and for generating venturi effects in said mixture conduit (**10**) that are variable with the swingable positions of said vacuum sustaining plate (**16**), a first fuel nozzle (**22**) opening into said mixture conduit (**10**) at a point on one side of said fixed venturi (**14**) and on the downstream side of said vacuum sustaining plate (**16**), said first fuel nozzle connected through a fuel conduit (**24**) to said fuel reservoir, an opening sensor (**40**) associated with said vacuum sustaining plate (**16**) for sensing the opening of the throat of said fixed venturi (**14**), a control circuit (**42**) associated with said opening sensor for providing a drive pulse signal with its duty factor varying in accordance with the degree of opening of said vacuum sustaining plate (**16**) but held at a level when the degree of opening of said vacuum sustaining plate (**16**) is over a predetermined level, an electromagnetic valve (**44**) provided for opening and closing said fuel conduit (**24**) so as to control the amount of fuel drawn from said first fuel nozzle (**22**) in response to the drive pulse signal applied thereto from said control circuit (**42**), a second fuel nozzle (**30**) connected to said reservoir and opening into said mixture conduit (**10**) at a point on the opposite side of said fixed venturi (**14**) and on the upstream side of said vacuum sustaining plate (**16**).

4,268,463

METHOD OF PRODUCING A FILM OF HIGH MOLECULAR SUBSTANCE

Juuro Aoyagi, Naritanishi, and Toshizi Ichikawa, Tokyo, both of Japan, assignors to Terumo Corporation, Japan

Filed Aug. 4, 1978, Ser. No. 931,266
Claims priority, application Japan, Aug. 12, 1977, 52-96724
Int. Cl.³ H05B *1/00*
U.S. Cl. 264—22 **11 Claims**

1. A method of producing a membrane of a high molecular substance, comprising forming a solution containing a hydroxy oligomer and a styrene-based oligomer into a thin layer, and irradiating radioactive rays or an electron beam to said thin layer so as to cause crosslinking between said hydroxy oligomer and styrene-based oligomer, said hydroxy oligomer being derived from a hydroxy monomer selected from the group consisting of hydroxy lower alkyl acrylate, hydroxy lower alkyl methacrylate, hydroxy lower alkoxy lower alkyl acrylate and hydroxy lower alkoxy lower alkyl methacrylate, and the styrene-based oligomer being selected from the group consisting of homooligomers of styrenes and cooligomers of styrenes with unsaturated dicarboxylic acids.

4,268,464

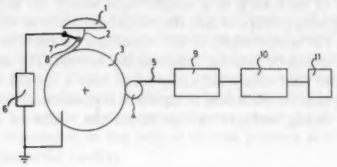
ELECTROSTATIC PINNING OF EXTRUDED POLYAMIDE FILM

Yasutomi Yoshino; Fumio Nishimura; Haruhiko Watanabe; Masahiro Kobayashi; Kunio Takeuchi, and Haruo Okudaira, all of Inuyama, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Aug. 16, 1979, Ser. No. 67,485
Int. Cl.³ B29D *7/02, 7/24*
U.S. Cl. 264—22 **12 Claims**

1. A process for production of a sheet of a polyamide material which comprises extruding the polyamide material in a melt state in the form of sheet and bringing the extruded sheet in a melt state into contact with the surface of a moving chill body for quenching to give an undrawn film, characterized in that a direct current of high voltage is applied between an electrode having discharge points arranged discontinuously and the extruded sheet so as to produce a discharge in a

steamer corona state onto the extruded sheet, whereby the extruded sheet is brought into tight and close contact with the



surface of the moving chill body electrically grounded so as to be chilled quickly.

4,268,465

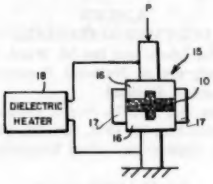
METHOD OF ACCELERATING THE COOLING OF POLYMERIC ARTICLES

Nam P. Suh, Sudbury, and Lewis Erwin, II, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 872,752, Jan. 27, 1978, abandoned, which is a continuation of Ser. No. 628,964, Nov. 5, 1975, abandoned. This application Jun. 22, 1979, Ser. No. 51,181

Int. Cl.³ H05B *1/00*

U.S. Cl. 264—25 **15 Claims**



1. A method of forming a solid article from a plurality of polymeric particles, each of said particles having at least one selected region substantially responsive to heating by the application of high frequencey wave energy and at least one remaining region substantially unresponsive to the application of said energy, said method comprising:

a. applying pressure and said wave energy to all of said particles in a mold, the selected region of each of substantially all of said particles responding to said applied energy substantially simultaneously so that said selected regions are heated substantially simultaneously by said applied energy to a temperature such that the selected regions of adjacent particles are capable of fusing, the remaining region of each of substantially all of said particles being substantially unresponsive to said applied energy so that said remaining regions are only insubstantially heated by said applied energy, whereby a heterogeneous temperature distribution is produced within each of substantially all of said particles, said selected regions of adjacent particles fusing together; and

b. stopping the application of said energy to permit said heterogeneous temperature distribution to proceed to equilibrium by internal heat dissipation within each of substantially all of said particles from said selected regions to said remaining regions, so that said particles become firmly bonded together to from said solid article.

4,268,466

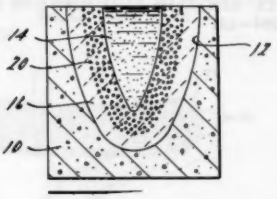
METHOD OF FORMING A SLIP CAST ARTICLE OF CELLULAR CONSTRUCTION

Andre Ezis, Grosse Ile, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 25, 1977, Ser. No. 781,376

Int. Cl.³ C04B *35/58*

U.S. Cl. 264—42 **12 Claims**



1. A method of forming a slip cast article having at least one zone of cellular construction which comprises:

providing a slip casting mold having (a) a casting volume formed therein in the configuration of the article to be formed, and (b) a capability of withdrawing a vehicle from a casting slip poured into said casting volume;

providing a stabilized casting slip including water as said vehicle and an oxidizable metal as a casting material;

pouring said stabilized casting slip into said casting volume of said casting mold, said casting mold acting on said stabilized casting slip to slowly withdraw said vehicle from said stabilized casting slip;

increasing the pH of said stabilized casting slip held within said casting volume until a hydrolysis reaction takes place between said vehicle and said casting material resulting in the evolution of gases, portions of said gases evolved being trapped within said slip to develop a zone of cellular construction of said casting material;

permitting continued contact between said casting slip and said casting volume so that said vehicle of said casting slip is withdrawn into said slip casting mold thereby to produce an article of casting material which is removable from said casting volume; and

removing said article having a zone of cellular construction from said casting mold.

4,268,467

PROCESS FOR MAKING FRICTION PRODUCTS

Harry H. Wagner, Ridgeway, Pa., assignor to Carlisle Corporation, Cincinnati, Ohio

Filed Oct. 12, 1979, Ser. No. 84,354

Int. Cl.³ B29G *1/00*

U.S. Cl. 264—111 **6 Claims**

1. In a process for molding a shaped article of thermally-resistant, fiber-reinforced, friction material from a composition comprising an effective quantity of inorganic heat-resistant fiber reinforcement admixed with an effective quantity of a thermo-setting resin binder system, the improvement comprising:

(a) enclosing a quantity of said composition to be molded to said desired shape within a thermally decomposable container of flexible encapsulating material,

(b) sealing said container,

(c) placing said sealed container and contents therein within a curing mold having a shape for said shaped article,

(d) heating and pressing said composition within said mold to cure said resin binder to bond the composition into said shaped article, wherein said heating within said mold thermally decomposes said container; and

(e) opening said mold and removing said molded article.

4,268,468
METHOD OF MAKING A MEDICAL PROSTHESIS

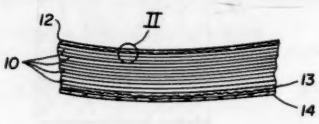
Friedrich J. Esper, Leonberg, and Hans-Martin Wiedenmann, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 761,372, Jan. 21, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 923,934

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1977, 2603456

Int. Cl.[3] B29C *27/00, 27/22;* B29D *9/00;* B29G *7/00*

U.S. Cl. 264—131 10 Claims



1. Method to make a bone replacement prosthetic structure or appliance of a biologically compatible material suitable as a bone replacement prosthetic implant including a core element made of a fiber-reinformed thermosetting material; and

a surface element made of a biologically compatible fiber reinforced thermoplastic material completely surrounding said core element and internally interlocked with the core element

comprising steps of

providing an inner support structure of at least one material selected from the group consisting of:

elongated essentially parallel positioned fibers, woven fiber fabric, fiber mats, matted fibers and felted fibers;

soaking the support structure in a thermo-setting resin;

surrounding said soaked inner support structure with a surface structure comprising a biologically compatible thermoplastic resin, at least a portion of the thermoplastic resin being at the side remote from the thermosetting resin soaked support structure to form a sub-assembly, said thermosetting resin being a resin that will cure at a temperature which overlaps in the temperature range of from 160° C. to 200° C. with the temperature range of softening of said thermoplastic resin;

introducing said sub-assembly into a mold having the desired shape of the prosthetic structure or appliance;

simultaneously heating to a temperature of from 160° C. to 200° C. at which said thermosetting resin cures and said thermoplastic resin softens and compressing the mold to compress the sub-assembly and cure the thermosetting resin and thereby form said core element and mold the thermoplastic resin and thereby causing the outer thermoplastic structure to interlock with the inner support structure and forming the surface structure with an outer surface consisting essentially only of thermoplastic resin; and

removing the mold after cooling to a temperature at which the outer surface of the thermoplastic resin has solidified.

4,268,469
METHOD OF ENVELOPING ARTICLES WITH THERMOPLASTIC STRIP MATERIAL

Jan Bouwknegt; Hendrik J. Verbeek, and Gerard J. Scholten, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

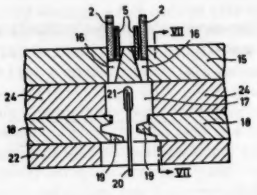
Continuation of Ser. No. 805,966, Jun. 13, 1977, abandoned, which is a continuation of Ser. No. 509,479, Sep. 26, 1974, abandoned. This application Jun. 15, 1979, Ser. No. 48,949

Claims priority, application Netherlands, Oct. 4, 1973, 7313628

Int. Cl.[3] B29C *27/00;* B29D *27/00*

U.S. Cl. 264—138 3 Claims

1. A method of permanently enveloping an electrical component in a thermoplastic material, which consists essentially in providing two longitudinal strips of a closed-cell cellular thermoplastic material in parallel spaced relationship to each other, initially heating such parallel strips to a temperature below the softening or melting temperature of the thermoplastic material, thereafter additionally heating only the facing surface of each strip to a temperature above the softening or melting temperature of said thermoplastic material while maintaining the temperature of the remainder of each strip below said softening or melting temperature, introducing said heated strips and said electrical component into a mould in such a manner that the electrical component is positioned between the heated facing surfaces of the strips, the width of the strips



being greater than the width of the electrical component, and closing said mould about the strips with the electrical component therebetween so as to encase the electrical component within the strips and to plastically deform the strips to the shape of the mould, the facing surfaces of the strips having been heated only to an extent that, at the time the mould is closed to encase the electrical component within the strips, the temperature gradient resulting from said heating extends from the facing surface of each strip over less than half the thickness thereof.

4,268,470
POLYMER MATERIALS

Giancarlo Capaccio, Leeds, and Ian M. Ward, Bramhope, both of England, assignors to National Research Development Corporation, London, England

Continuation of Ser. No. 739,074, Nov. 5, 1976, abandoned. This application Sep. 19, 1978, Ser. No. 943,856

Claims priority, application United Kingdom, Nov. 5, 1975, 45920/75

Int. Cl.[3] C08F *10/02*

U.S. Cl. 528—502 12 Claims

1. A process for the preparation of an oriented polymer material comprising the steps of providing a crystallisable polypropylene homopolymer having a weight average molecular weight greater than 300,000 and a ratio of weight average molecular weight to number average molecular weight greater than 5, and attenuating said polymer at a temperature from 95° C. to 140° C. and at a rate such that the deformation ratio is greater than 18 such that said oriented polymer material has a creep strain at room temperature of less than 3% after 15 hours under stress which produces an initial strain of 1% after 10 seconds.

4,268,471
METHOD OF PRODUCING A REINFORCED ENDLESS TOOTHED BELT OF SYNTHETIC PLASTICS MATERIAL HAVING A MINUS TOLERANCE OF THE BELT CIRCUMFERENTIAL LENGTH

Rudolf Breher, Porta Westfalica, Fed. Rep. of Germany, assignor to Breco Kunststoffverarbeitungs-GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

Filed May 23, 1980, Ser. No. 152,730

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920916

Int. Cl.[2] B29C *6/00, 7/00;* B29F *1/00*

U.S. Cl. 264—229 3 Claims

1. A method of producing an endless toothed belt which is made of synthetic plastics material or similar extrudable mate-

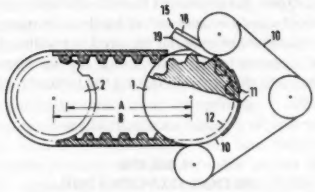
rial and is reinforced by a wire insert which extends in the circumferential direction of said belt and exists with a minus tolerance of the belt circumferential length when said belt is in the unstretched state, said method comprising the steps of:

providing a molding wheel, the circumference of which is provided with an annular depression which is profiled in a gear wheel manner and corresponds in cross section to the cross section of the belt to be produced, covering means associated with said molding wheel and being placeable upon a portion of the circumference thereof for closing said depression in the region of this portion to form an arcuate mold cavity;

providing a tensioning wheel locatable at a variable distance from said molding wheel and having a circumference profiled in a gear wheel manner;

providing a wire coil helically wound from a reinforcing wire;

placing said wire coil on said molding wheel and said tensioning wheel after setting the interaxial distance between said molding wheel and said tensioning wheel below the intended distance in such a way that the circumferential length of said wire coil is smaller by a predetermined minus tolerance than the intended circumferential length of said wire insert in the belt to be produced when the latter is in its tensioned state;



fixing said wire coil in position to prevent receding of any portion thereof in the circumferential direction of said coil;

increasing the interaxial distance between said molding wheel and said tensioning wheel to the intended distance to increase the circumference of said wire coil, accompanied by elastic stretching of the turns of said wire coil, to the intended circumferential length to thus place said wire coil in a tensioned state;

closing said depression with said covering means to form said mold cavity;

turning said wire coil through one revolution by rotating said molding wheel and said tensioning wheel;

introducing synthetic plastics material or similar extrudable material into the beginning of said mold cavity throughout said wire coil revolution to form a material strand;

fusing the beginning of said material strand with the end thereof as said strand beginning starts to re-enter the beginning of said mold cavity at the conclusion of said wire coil revolution;

hardening said material;

shortening the interaxial distance between said molding wheel and said tensioning wheel to relax the embedding reinforcing insert and thereby contract the finished endless toothed belt; and

axially stripping said endless belt from said molding wheel and said tensioning wheel.

4,268,472

VALVE

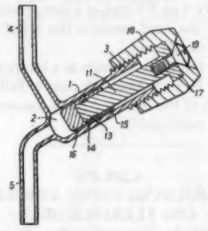
Douglas D. J. Nightingale, St. Albans, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 964,356, Nov. 28, 1978, which is a continuation of Ser. No. 617,510, Sep. 29, 1975, abandoned, which is a continuation of Ser. No. 482,983, Jun. 25, 1974, abandoned. This application Oct. 24, 1979, Ser. No. 88,057

Claims priority, application United Kingdom, Jul. 3, 1973, 31564/73

Int. Cl.³ B29C *13/00*

U.S. Cl. 264—230 **1 Claim**



1. A method for the production of a spindle for a fluid flow control valve comprising a body having a valve seat with a flow passage passing through the seat and a spindle slideable within the valve body to bring one end into engagement with the valve seat for occluding the flow passage during operation of the valve, the method comprising

forming a mandrel with an end portion thereof having a substantially cylindrical surface with an annular groove therearound,

locating in said annular groove a resilient annulus having an external diameter greater than that of the cylindrical surface,

shaping a sheath from polytetrafluoroethylene to comprise side walls and an integral closed end shaped to engage the valve seat for occlusion of the flow passage therethrough, the side walls being formed with an internal diameter less than or equal to the external diameter of the cylindrical surface of the mandrel,

warming at least the side walls of the sheath until they are able to receive the mandrel and resilient annulus therewithin, and

sliding the warm sheath over the end of the mandrel until the side walls extend over the resilient annulus;

whereby on cooling, the sheath conforms to the shape of the mandrel's cylindrical surface to form a raised annular ridge which in the assembled valve is biased against the valve body by the resilient annulus to thereby form a gland seal for preventing loss of fluid from the flow passage.

4,268,473

ALUMINUM-FILLED EPOXY EMBOSSING CAUL AND MEANS FOR PRODUCTION

Richard K. Bower, New Milford, Conn.; August H. Rauch, Stayton, and John F. Richard, Lebanon, both of Oreg., assignors to Champion International Corporation, Stamford, Conn.

Continuation of Ser. No. 824,827, Aug. 15, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,584

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—234 **7 Claims**

1. A method for forming a high-strength, temperature resistant caul capable of embossing a textured surface onto a preformed panel, overlaid with a resin impregnated paper, at temperatures of from 270° to 320° F. and pressures of from 175 to 250 psi, comprising the steps of:

forming a mold from a textured hardboard panel;

applying a sealer to the panel;

coating the sealed panel with a release agent;

preheating an aluminum filled epoxy resin to approximately 80°–90° F., said resin having a viscosity no higher than about 100,000 centipoise at room temperature;

impregnating at least one layer of glass fiber cloth with said preheated resin admixed with a catalyst, the ratio of resin to catalyst being approximately 17.5 to 1 respectively;

placing said layer of catalyzed resin impregnated glass fiber cloth in said mold;

pouring additional preheated catalyzed resin onto said mold containing said catalyzed resin impregnated fiberglass cloth layer;

partially curing the caul formed from the catalyzed resin for approximately 4 to 5 hours at a temperature of about 150° F., such that the caul assumes the relief configuration of the textured panel; and

baking the caul for about 8 hours at a temperature of approximately 350° F. such that the caul is fully cured and the configuration of the textured panel assumed by the caul is permanently maintained.

4,268,474

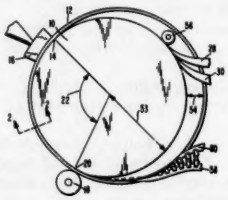
METHOD OF MOLDING USING A MOLDING WHEEL AND FLEXIBLE BELT

George B. Moertel, Conneautville, Pa., assignor to Textron, Inc., Providence, R.I.

Continuation of Ser. No. 826,542, Aug. 22, 1977, abandoned. This application Dec. 27, 1979, Ser. No. 107,759

Int. Cl.[3] **B29D** *5/00;* **B29C** *5/00*

U.S. Cl. 264—252 **7 Claims**



1. A method of continuously molding polymer elements comprising the steps of

simultaneously rotating in the same direction a cylindrical molding wheel and a continuous flexible steel band which has a thickness greater than 0.002 times the diameter of the molding wheel and which encircles the molding wheel,

continuously engaging the flexible steel band against a portion of the periphery of the molding wheel between an engaging point and a disengaging point as the molding wheel and the flexible steel band rotate from the engaging point to the disengaging point wherein the engaged portion of the wheel periphery at all times is less than a 160° arcuate portion of the circumference of the molding wheel with the band being spaced from the remaining portion of the wheel periphery,

injecting molten polymer material after the engaging point into cavity means formed between the steel band and the molding wheel with at least a portion of the cavity means formed in the metal band,

solidifying the polymer within the cavity means after injection but prior to reaching the disengaging point to form solid elements,

removing the solid elements after passing the disengaging point, and

maintaining the flexible steel band with a substantial inward radius of curvature equal to or greater than the molding wheel radius throughout every point of the band,

said maintaining including preventing the steel band from becoming straight at any point thereof, and preventing the steel band from having an outward radius of curvature at any point thereof.

4,268,475

METHOD OF PRODUCING HOLLOW MOULDED MEMBERS

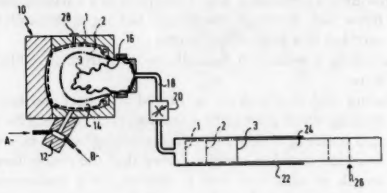
Günter Willmerding, Inning, Fed. Rep. of Germany, assignor to Metzeler Kautschuk Aktiengesellschaft, Munich, Fed. Rep. of Germany

Division of Ser. No. 46,861, Jun. 8, 1979, Pat. No. 4,219,317. This application Mar. 27, 1980, Ser. No. 134,363

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1978, 2826340

Int. Cl.[3] **B29C** *5/00;* **B29H** *5/18, 5/02, 17/00*

U.S. Cl. 264—315 **6 Claims**



1. Method for the production of hollow shaped bodies made of pourable and hardenable material in a mold cavity which comprises, disposing a core with a deformable membrane into the mold cavity, before introducing said material, expanding the membrane to a volume that substantially fills the mold cavity and expels gas contained therein, thereafter introducing into the mold cavity an amount of hardenable material corresponding to amount of material required to produce the shaped body, and concomitantly contracting the membrane to the form of the core, thereby minimizing the inclusion of air in the shaped body.

4,268,476

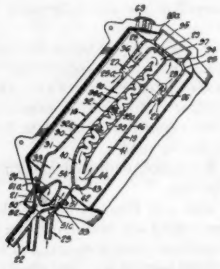
BLOOD OXYGENATOR

Donald A. Raible, Orange, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 584,464, Jun. 6, 1975, abandoned. This application May 26, 1976, Ser. No. 689,971

Int. Cl.[3] **A61M** *1/03*

U.S. Cl. 422—46 **16 Claims**



1. A bubble-type oxygenator having therein a bubble column having a first end and a second end, said bubble column being provided with at least one segment having a serpentine passageway formed therein to promote secondary flow of blood bubbles passing therethrough, said serpentine passageway comprising a series of arcuate sections, said sections being contiguous to the wall of said passageway and forming a plurality of opposing sets of spaced-apart protrusions extending outwardly, each protrusion from said opposing sets being offset from each other to form a substantially unrestricted passageway therethrough.

4,268,477

APPARATUS FOR DISTRIBUTION OF LIQUID TEST SAMPLES THROUGH VARIOUS TEST STATIONS

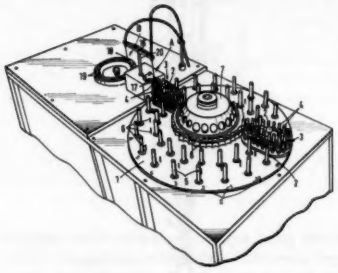
Curt Herzstark, Vaduz, Liechtenstein, assignor to BNA-Augustin GmbH & Co. KG, Grafenhausen, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,613

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826275

Int. Cl.[3] G01N *1/14, 35/06*

U.S. Cl. 422—64 12 Claims



1. Apparatus for distribution of portions of many samples of liquids, obtained from different sources, to a plurality of destinations according to a set of destinations individually prescribed for each sample, so that a set of said samples is identifiable for each of said destinations for delivery of a sample portion to the particular destination, comprising:

means for mounting each of a multiplicity of said samples of liquids, each in an individual vessel, in a distinctive and addressable position on a first movable carrier (1);

means for actuating said first carrier controllably so as to present any predetermined set of said samples selected from among all the samples on said carrier, in succession, to a liquid transfer station at a fixed location alongside said carrier, with a period of dwell at said station to permit liquid transfer at each presentation of a sample to said station, and to do so substantially without intermediate stopping of said first carrier between said dwell periods and without intermediate presentation to said station of any sample not belonging to said predetermined selected set;

means for transferring a portion of each liquid sample of said set, while said samples are respectively presented by said first carrier at said station, into an individually identified container of a set of containers having a common destination and held on a second carrier for transfer to said destination; and

means for causing said actuation means, after the actuation of said first carrier thereby for presentation of a first set of samples to said liquid transfer station for transfer of sample portions to containers having a first common destination, to execute the presentation of a second set of said samples on said first carrier, possibly but not necessarily different from said first set, to said liquid transfer station for transfer of sample portions to containers having a second common destination and held on a third carrier for transfer to said second destination, and so on, until containers for all waiting destinations have been supplied with prescribed sample portions,

whereby the respective sets of containers for said destinations are ready for removal to said destinations in sequence, while time is saved by omission of nugatory presentations of samples to said transfer station, and reliable preservation of sample identity is also provided.

4,268,478

METHOD AND APPARATUS FOR GENERATING AND TRANSFERRING A GASEOUS TEST SAMPLE

Bernhard W. Huber, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co. GmbH, Uberlingen, Fed. Rep. of Germany

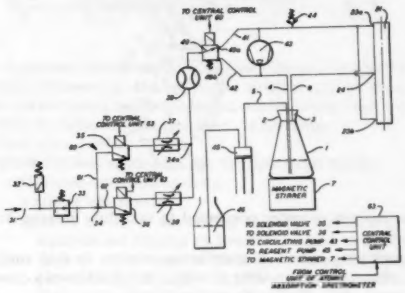
Division of Ser. No. 835,070, Sep. 21, 1977, Pat. No. 4,138,215, which is a continuation of Ser. No. 808,004, Jun. 20, 1977, abandoned. This application Jul. 19, 1978, Ser. No. 5,541

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627255

The portion of the term of this patent subsequent to Feb. 6, 1995, has been disclaimed.

Int. Cl.[3] G01N *27/64*

U.S. Cl. 422—68 8 Claims



1. A device for generating a gaseous test sample from a liquid sample and for transferring this test sample into a measuring cuvette of an atomic absorption spectrometer comprising:

a measuring cuvette;

a sample vessel;

inert gas inlet passage means and an inert gas outlet conduit, each having one end respectively in fluid flow communication with the interior of said sample vessel;

inert gas inlet conduit means for connecting said inert gas inlet passage means to an inert gas source;

said inert gas outlet conduit being arranged to form fluid flow communication between the interior of said sample vessel and said measuring cuvette;

said inert gas inlet conduit means including a pair of branch lines disposed in operative parallel relationship, the first branch line containing first restriction means and the second branch line containing second restriction means, first valving means for selectively directing the flow of inert gas to one or the other or both of said branch lines to thereby selectively provide a first flow rate of gas and a second substantially lower rate of flow of inert gas;

control means for automatically controlling said first valving means; and

means for adding a reagent to said sample vessel.

4,268,479

FLUID ANALYZER

Milo E. Webster, Braintree, Mass., assignor to Instrumentation Laboratory Inc., Lexington, Mass.

Filed Jan. 10, 1980, Ser. No. 111,015

Int. Cl.[3] G01N *1/10*

U.S. Cl. 422—68 12 Claims

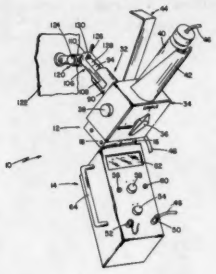
1. A portable fluid analyzer for attachment to a zwickel fitting or the like comprising

a sampling section comprising flow passage structure having a fluid inlet at one end thereof, a sealing surface carried by said flow passage structure for sealing engagement with a discharge port of the fitting.

retainer structure for engagement with said fitting, said retainer structure being movable between a retaining position, and a released position spaced further from said fluid inlet then said retaining position,

biasing means for urging said retainer structure towards said retaining position,

spaced handle and lever portions that are manually movable towards one another for moving said retainer structure towards said released position,



an analysis chamber connected to said flow passage structure,

monitoring means in monitoring relation to said analysis chamber for providing an output as a function of a constituent of the fluid to be analyzed, and

an analysis section for processing the output of said monitoring means and producing an output.

4,268,480

DEVICE FOR MEASURING A PHYSICAL OPERATING CHARACTERISTIC OF AN OZONIZER

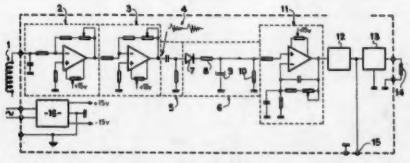
Maurice Marets, Sevran, France, assignor to Trailigaz, Compagnie Generale de l'Ozone, Garges les Gonesse, France

Filed May 21, 1979, Ser. No. 40,824

Claims priority, application France, May 23, 1978, 78 15259

Int. Cl.³ B01D *11/00;* **B01F** *1/00*

U.S. Cl. 422—98 **8 Claims**



1. An apparatus for measuring a physical operating characteristic of an ozonizer which is related to the ozonization power, the production of ozone or the concentration of ozone in the air, said apparatus comprising an ozonizer and a medium or high-frequency sensor placed in the vicinity of the ozonizer for detecting the medium or high-frequency signal emitted by the ozonizer, and an electronic processing ciruit which delivers an electrical signal the voltage of which is proportional to the mean energy content of the medium or high-frequency signal received by the sensor.

4,268,481

PIPETTE

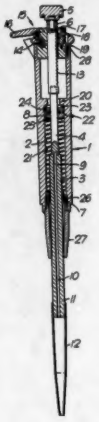
Osmo A. Suovaniemi, and Jukka Tervamäki, both of Helsinki, Finland, assignors to Kommandittiyhtio Finnpipette Osmo A. Suovaniemi, Finland

Filed Mar. 13, 1980, Ser. No. 129,987

Claims priority, application Finland, Mar. 23, 1979, 790992

Int. Cl.³ B01L *3/02*

U.S. Cl. 422—100 **3 Claims**



1. A pipette comprising:

a frame having an aperture at its upper portion and a cylinder at its lower portion, said cylinder including upper and lower portions;

a piston slidably mounted within said cylinder, said piston having a lower end extending out of the lower portion of said cylinder and out of the lower portion of said frame;

means for providing an air-tight seal between said piston and said cylinder at the lowermost portion of the cylinder;

a piston rod joined to an upper portion of said piston, said piston rod having a thinner cross section than the piston and extending through said aperture in said frame;

means for providing an air-tight seal between said piston rod and said cylinder;

means for manual operation of said piston rod;

a channel disposed within said piston, said channel extending along the length of the piston from an upper portion thereof and passing through its lower end coupling for fluid communication said cylinder and the surrounding atmosphere; and

a vacuum being created in said cylinder when said piston is displaced downwardly by said piston rod to thereby intake fluid into said piston through said channel.

4,268,482

CATALYTIC REACTOR

Norio Arashi; Tadayoshi Murakami, both of Hitachi; Kiyoshi Narato, Ibaraki; Masaaki Shiga, Oharasakainishi, and Tomihisa Ishikawa, Kure, all of Japan, assignors to Hitachi, Ltd. and Babcock-Hitachi K.K., both of Tokyo, Japan

Filed Aug. 7, 1978, Ser. No. 931,400

Claims priority, application Japan, Aug. 5, 1977, 52-93423

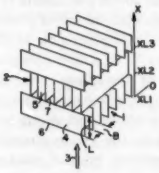
Int. Cl.³ B01J *8/02;* **F01N** *3/15*

U.S. Cl. 422—171 **11 Claims**

1. A catalytic reactor in which is produced a catalytic reaction of a gas to be treated, comprising:

a reaction chamber; inlet means for passing said gas into one end of said reaction chamber, outlet means for removing gases from an opposite end of said reaction chamber, whereby said gas flows in a direction through said reac-

tion chamber from said inlet means to said outlet means; a plurality of catalyst groups disposed in the reaction chamber, and stacked on one another in the direction of gas flow, each of said catalyst groups including a plurality of sheet catalysts arranged in parallel to each other and separated from each other a sufficient distance such that drafting resistance is minimized, thereby to provide a plurality of gas passages, the gas passages extending parallel to the gas flow direction; each of said sheet catalysts having a length and a width, the length extending in a direction parallel to the gas flow direction, the width extending in a direction perpendicular to the gas flow



direction, with each sheet catalyst being thin in comparison to its length and width, the width being larger than the length, with the edge of each sheet catalyst which the gas initially contacts as it flows in the gas flow direction being the leading edge of the sheet, with one of the edges extending along the width constituting said leading edge, and with the width directions of said sheet catalysts in each of said catalyst groups extending in a direction traversing the width directions of the sheet catalysts in the immediately adjacent catalyst groups, whereby the Sherwood number of the gas increases as the gas passes the leading edge of the sheets in each of said catalyst groups.

4,268,483

IMPROVEMENTS IN AND RELATING TO THE GROWTH OF CRYSTALLINE MATERIAL

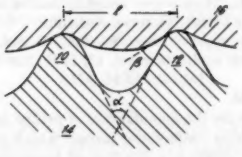
Keith S. A. Davey, Cambridge, and Rowland M. Ware, Cottenham, both of England, assignors to Metals Research Limited, Hartfordshire, England

Filed Mar. 14, 1977, Ser. No. 777,352

Claims priority, application United Kingdom, Mar. 17, 1976, 10643/76

Int. Cl.[3] **C30B** *15/34*

U.S. Cl. 422—246 **29 Claims**



1. A shape forming member having a passage for defining the meniscus of a melt which is to be crystallized and through which the crystallized material is drawn and in which at least the surface of the passage is formed from a material having an angle of contact θ with the liquid melt of less than 90°, (θ measured outside the liquid): wherein at least the passage is formed with a rough surface (as herein defined) so as to reduce the angle of contact θ.

4,268,484

APPARATUS FOR EFFECTING LIQUID-LIQUID CONTACT IN A PLURALITY OF STAGES

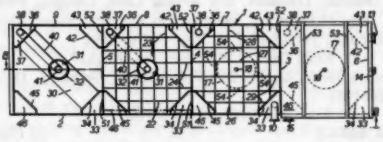
Edward Gavin, Wimborne, England, assignor to Davy International (Minerals & Metals) Ltd., Cleveland, England

Filed Aug. 2, 1979, Ser. No. 63,089

Claims priority, application United Kingdom, Aug. 4, 1978, 32231/78; Jan. 29, 1979, 03033/79

Int. Cl.[3] **B01D** *11/04*

U.S. Cl. 422—259 **9 Claims**



1. Apparatus for effecting liquid-liquid contact in a plurality of stages between an aqueous liquid medium and an organic hydrophobic liquid medium capable of undergoing mass transfer with the aqueous liquid medium, comprising:

a first mixer-settler;

a second mixer-settler adjacent the first mixer-settler;

each mixer-settler comprising:

a mixing chamber;

agitator means in the mixing chamber for mixing the aqueous and organic hydrophobic liquid media so as to form a dispersion of globules on one medium dispersed in the other, which globules are of a size such that, upon standing under gravity, the dispersion is capable of disengaging substantially completely into two separate layers;

first conduit means for feeding the lighter medium of the two to the mixing chamber;

second conduit means for feeding the heavier medium of the two to the mixing chamber;

an upper settling chamber above the mixing chamber;

a lower settling chamber below the mixing chamber;

upper and lower baffle means extending across the mixer-settler so as to divide the mixing chamber from the upper settling chamber and the lower settling chamber respectively, each baffle means being adapted to provide a plurality of flow paths for liquid between the mixing chamber and the respective settling chamber and to permit maintenance in the respective settling chamber of conditions favouring dispersion disengagement despite turbulent mixing conditions in the mixing chamber;

outlet means for disengaged heavier medium from the lower settling chamber; and

offtake means for disengaged lighter medium from the upper settling chamber;

means for supplying heavier medium to the first mixer-settler communicating with the second conduit means thereof;

means for removing disengaged heavier medium from the second mixer-settler communicating with the outlet means therefrom;

means for supplying lighter medium to one of the first and second mixer-settlers communicating with the first conduit means thereof; and

means for removing disengaged lighter medium from the other one of the first and second mixer-settlers communicating with the offtake means thereof;

the outlet means for disengaged heavier medium of the first mixer-settler being arranged to communicate directly with the second conduit means of the second mixer-settler so as to enable disengaged heavier medium from the first mixer-settler to pass directly to the second mixer-settler; and

the offtake for lighter medium of the said one mixer-settler

comprising a weir for lighter medium between the first and second mixer-settlers which is positioned adjacent the first conduit means of the said other mixer-settler so as to enable disengaged lighter medium to flow from the said one mixer-settler over the weir to the said other mixer-settler.

4,268,485

PROCESS FOR THE SEPARATION OF RADIOACTIVE IMPURITIES OF BADDELEYITE

Klaus Deneke, Troisdorf, and Arnold Lenz, Cologne, both of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 3, 1976, Ser. No. 747,137

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1975, 2554651

Int. Cl.[2] **C01G** *43/00, 25/02, 27/02*

U.S. Cl. 423—3 **10 Claims**

1. A process for the separation of radioactive impurities from ground baddeleyite containing zirconium dioxide and which has been preliminarily purified to a concentrate containing more than 98% by weight of zirconium dioxide plus hafnium dioxide, comprising treating finely ground baddeleyite with an aqueous alkali hydroxide solution at elevated temperatures below the boiling point of said solution for removal of radioactive impurities form the ground baddeleyite and thereafter isolating said zirconium dioxide from said solution.

4,268,486

SELECTIVE CHROMATE REMOVAL FROM A CHLORATE SOLUTION

Manfred G. Noack, Northford, and Steven A. Manke, Wallingford, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Jul. 2, 1979, Ser. No. 54,333

Int. Cl.[3] **C01G** *37/00;* **C07F** *11/00*

U.S. Cl. 423—55 **18 Claims**

1. A process for removing hexavalent chromium from an impure aqueous solution which comprises:

(a) reacting a hydrazine compound with said impure aqueous solution, said impure aqueous solution containing from about 100 to about 750 grams of alkali metal chlorate per liter and from about 20 to about 400 grams of alkali metal chloride per liter, said reaction being carried out at a pH in the range from about 6.0 to about 7.5 to form an aqueous slurry of solid particles of trivalent chromium compound in an aqueous solution of alkali metal chlorate, alkali metal chloride, and a nitrogen-containing compound; and

(b) separating said solid particles of trivalent chromium compound from said aqueous solution; and

wherein said hydrazine compound selectively reduces hexavalent chromium to trivalent chromium to achieve hexavalent chromium removal without reducing said alkali metal chlorate or said alkali metal chloride.

4,268,487

METHOD OF MINIMIZING MANGANESE DIOXIDE SLUDGE FORMATION

Manuel G. Hicks, 1927 S. 8th St., Omaha, Nebr. 68108

Continuation-in-part of Ser. No. 947,360, Oct. 2, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 101,636

Int. Cl.[3] **B01D** *53/34*

U.S. Cl. 423—210 **2 Claims**

1. In a method of treating air containing gaseous oxidizable pollutants wherein the air is contacted with an aqueous scrubbing solution comprising potassium permanganate and wherein a manganese dioxide sludge is formed, the improvement comprising minimizing the formation of said sludge by incorporating into said scrubbing solution a sufficient quantity of a sodium silicate solution containing a substantial quantity of $Na_2Si_3O_7$.

4,268,488

PROCESS FOR THE CATALYTIC REDUCTION OF NITROGEN OXIDES IN GASEOUS MIXTURES

Edward A. Ginger, Northbrook, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed May 10, 1979, Ser. No. 37,615

Int. Cl.[3] **B01D** *53/34*

U.S. Cl. 423—239 A **11 Claims**

1. A process for the reductive removal of a nitrogen oxide from a gaseous stream containing said oxide which comprises contacting, at a reductive reaction temperature and pressure, said stream and ammonia with a physical mixture of a first catalyst and a second catalyst, said first catalyst comprising on an elemental basis from about 1 to about 15 wt % copper or a copper compound supported on a first porous carrier material, and said second catalyst comprising on an elemental basis from about 4 to about 10 wt % of a first component selected from the group consisting of vanadium, chromium, molybdenum and tungsten, and compounds thereof, in combination with on an elemental basis from about 4 to about 10 wt % of a second component selected from the group consisting of iron, cobalt and nickel, and compounds thereof, said combination being supported on a second porous carrier material.

4,268,489

PROCESS FOR THE REMOVAL OF SULFUR DIOXIDE FROM GASES

Egon Haese, Bochum, Fed. Rep. of Germany, assignor to Dr. C. Otto & Comp. GmbH, Bochum, Fed. Rep. of Germany and Sidmar N.V., Ghent, Belgium

Filed Sep. 5, 1978, Ser. No. 939,718

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1977, 2741116

Int. Cl.[3] **C01B** *17/00*

U.S. Cl. 423—242 **3 Claims**

1. A process for the removal of sulfur dioxide from exhaust gases comprising (a) treating said gases in a scrubber with a solution containing ammonium sulfite and ammonium bisulfite to absorb said sulfur dioxide, (b) drawing off a portion of said solution, (c) oxidizing said portion of the solution to form ammonium sulfate, and (d) further treating the gas with the oxidized solution while maintaining the dew point of said further treated gas beneath the temperature of the gas; whereby the escape of ammonia in the further treating process is prevented.

4,268,490

PROCESSES OF MAKING PRILLED AMMONIUM NITRATE COMPOSITIONS

Robert S. Neville, Merewether Heights, Australia, assignor to ICI Australia Limited, Victoria, Australia

Continuation-in-part of Ser. No. 921,515, Jul. 3, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 57,004

Int. Cl.[3] **C01C** *1/18*

U.S. Cl. 423—266 **27 Claims**

1. In a process for the manufacture of prilled or granulating material comprising ammonium nitrate which process comprises a process wherein a solution of ammonium nitrate is made by the reaction of ammonia and nitric acid in a neutraliser, said solution is concentrated by evaporation to the concentration required for prilling or granulating, and the thus formed concentrate is subjected to a prilling or granulating process to form prills or granules which are optionally dried and cooled, the improvement comprising the addition of at least one water soluble aluminium salt to the said solution of ammonium nitrate at any stage before said concentrate is formed.

4,268,491

PRODUCING SULPHUR-NITROGEN GROUPS

Arthur J. Banister, Durham; Andrew J. Fielder, High Shincliffe; Zdenek V. Hauptman, Bishop Auckland, and Nigel R. M. Smith, Packington, Nr. Ashby de la Zouch, all of England, assignors to National Research Development Corporation, London, England

Filed Oct. 26, 1979, Ser. No. 88,813
Int. Cl.[3] C01B *17/00, 17/45*
U.S. Cl. 423—406 15 Claims

1. A compound of the formula $(S_3N_bI_c)_x$ where b is from 1.9 to 2.3, and c is from 0.4 to 1.3.

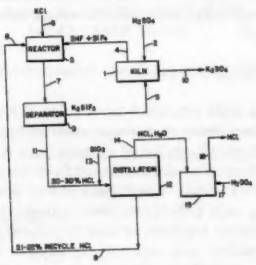
8. A method of producing poly(sulphur nitride), comprising contacting S_4N_3Cl vapour with silver sulphide and allowing the contacted vapour to condense to give S_2N_2, which is then allowed to polymerise at room temperature.

4,268,492

PROCESS FOR PRODUCTION OF POTASSIUM SULFATE AND HYDROCHLORIC ACID

John B. Sardisco, Shreveport, La., and Erhart K. Drechsel, Houston, Tex., assignors to Pennzoil Company, Houston, Tex.

Filed Aug. 6, 1979, Ser. No. 64,182
Int. Cl.[3] C01B *7/03*
U.S. Cl. 423—482 12 Claims



1. A process for the production of about 20–30 wt. % hydrochloric acid and alkali metal sulfate comprising

reacting an alkali metal fluosilicate with sulfuric acid at 250°–300° C. in the presence of SiO_2, to produce an alkali metal sulfate as a product and to form a gaseous mixture of HF and SiF_4; said SiO_2 being present in a molar ratio of about 0.50–0.62, based upon the alkali metal fluosilicate;

reacting in a second reactor, the gaseous mixture with about 21–22 wt. % aqueous HCl solution, and a solid alkali metal chloride to form filterable crystals of an alkali metal fluosilicate in about 20–30 wt. % hydrochloric acid; and

recovering the about 20–30 wt. % hydrochloric acid by separating the alkali metal fluosilicate from the about 20–30 wt. % hydrochloric acid, and recycling the alkali metal fluosilicate for reaction with sulfuric acid, wherein the alkali metal in the fluosilicate and alkali metal chloride are the same.

4,268,493

COMPOSITION AND METHOD FOR IMPROVING MEAT PRODUCTION AND QUALITY AS WELL AS FEED UTILIZATION BY ANIMALS

Walter Rosenthal, 150 E. 74th St., New York, N.Y. 10021

Filed Nov. 2, 1978, Ser. No. 956,853
Int. Cl.[3] A61K *43/00;* A23K *1/165*
U.S. Cl. 424—1 4 Claims

1. In a method of improving meat production and meat quality as well as feed utilization by animals, the step which comprises administering to said animals an effective amount of a radio-active iodine isotope compound so as to partly inactivate the glandular thyroid tissue.

4,268,494

AUTOMATED DIRECT SERUM RADIOASSAY

Max Reese, Salt Lake City, Utah, assignor to Becton Dickinson & Company, Paramus, N.J.

Continuation-in-part of Ser. No. 774,390, Mar. 4, 1977, Pat. No. 4,108,976. This application Jun. 30, 1978, Ser. No. 920,801
The portion of the term of this patent subsequent to Aug. 22, 1995, has been disclaimed.
Int. Cl.[2] G01N *33/16;* A61K *43/00*
U.S. Cl. 424—1 7 Claims

1. In a process for automated radioassay of a ligand sample by flowing the sample through a chamber containing an immobilized binder composed of a solid substrate and binder specific to the ligand and wherein the sample contains proteins tending to plug the substrate, the improvement comprising:

diluting the sample to a consistency for free unplugged flow through the immobilized binder;

preincubating the sample with a binder specific to the ligand in said sample being assayed together with a known amount of a radioactive labeled ligand to form a mixture including

(a) unlabeled ligand bound to the binder,

(b) labeled ligand bound to the binder,

(c) free unbound unlabeled ligand, and

(d) free unbound labeled ligand;

providing a chamber containing a binder specific to the ligand supported on a solid substrate to bind free unbound labeled and unlabeled ligand;

flowing said mixture through said chamber to bind free unbound labeled and unlabeled ligand to the solid supported binder in the chamber with the bound labeled and unlabeled ligand passing through the chamber;

flowing an eluting solution through said chamber to effect release of labeled and unlabeled ligand from the solid supported binder in the chamber;

counting the radioactivity of at least one or both of the labeled ligand which passed through the chamber and the labeled ligand eluted from the chamber to determine the quantity of the ligand sought to be assayed in said sample; and

rinsing the chamber for subsequent assays of other samples of the same ligand.

4,268,495

INJECTABLE EMBOLIZATION AND OCCLUSION SOLUTION

Hans Muxfeldt, Norderstedt, and Hermann Dahlke, Hamburg, both of Fed. Rep. of Germany, assignors to Ethicon, Inc., Somerville, N.J.

Filed Jan. 8, 1979, Ser. No. 1,802
Int. Cl.[3] A61K *29/00;* G01N *33/48*
U.S. Cl. 424—1 15 Claims

1. A method for occluding the vascular or duct system of a living organ by injecting into the organ at the site to be occluded a solution comprising prolamine in a physiologically compatible solvent.

4,268,496

SUSTAINED-RELEASE SOLID PHARMACEUTICAL DOSAGE FORMS AND PREPARATION THEREOF

Shigeru Ohno, Kamakura, and Fujio Sekigawa, Omiya, both of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 956,351, Oct. 31, 1978, abandoned, which is a continuation of Ser. No. 675,819, Apr. 12, 1976, abandoned. This application Apr. 7, 1980, Ser. No. 138,122
Claims priority, application Japan, Apr. 12, 1975, 50-48880
Int. Cl.[3] A61K *9/24, 9/32*
U.S. Cl. 424—19 16 Claims

1. A solid pharmaceutical dosage form of sustained release with a coating layer consisting essentially of an organopolysiloxane curable by crosslinking and a water-soluble ether of

cellulose, said organopolysiloxane and said ether of cellulose being present in a ratio of from 5:95 to 95:5 by weight in said coating layer.

4,268,497

SUSTAINED DRUG RELEASE DEVICE

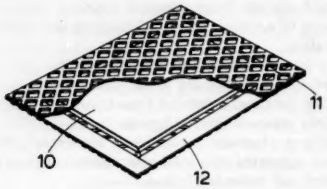
Gerald J. L. Griffin, London, and Malcolm D. Brewer, Crawley, both of England, assignors to Beecham Group Limited, Great Britain

Filed Nov. 7, 1979, Ser. No. 92,178

Claims priority, application United Kingdom, Nov. 7, 1978, 43555/78

Int. Cl.[3] **A61K** *9/70;* **A61J** *3/00, 3/07;* **A61K** *9/52*

U.S. Cl. 424—27 **2 Claims**



1. In a device for administration to a ruminant of a veterinary medicament in which the medicament is dispersed in a resilient sheet comprising ethylene-vinyl acetate copolymer of a size and composition such that the sheet is capable of constraint in a rolled-up configuration permitting oral administration and of a subsequent assumption of an unrolled configuration when unconstrained in the rumen, the improvement wherein said sheet is enclosed in an apertured flexible envelope.

4,268,498

CLEAR COSMETIC STICKS

Harvey Gedeon, Monsey; James F. Joyce, Brooklyn, and David Kellner, Hollis, all of N.Y., assignors to Revlon, Inc., New York, N.Y.

Filed Jul. 16, 1979, Ser. No. 57,568

Int. Cl.[3] **A61K** *7/42, 7/44*

U.S. Cl. 424—59 **6 Claims**

1. A substantially clear cosmetic stick consisting essentially of as essential ingredients in parts by weight:

polyoxyethylene (17–23)-glucose-fatty acid ester	2–5
polyoxyethylene (20–60) ether of a long chain alcohol	2–5
polyoxypropylene (2–5) ether of a long chain alcohol	24–72
sodium salt of a fatty acid	5–8
propylene glycol	5–10
lower alkyl ester of a fatty acid	5–10
water	2–5
cosmetically active ingredient	3–40

wherein the fatty acid moiety in the salts or esters contains from 12 to 20 carbon atoms, the long chain alcohol moieties contain from 10 to 20 carbon atoms, the lower alkyl moieties contain from 1 to 6 carbon atoms, and the cosmetically active ingredient is selected from the group consisting of fragrances, sunscreens, and deodorants.

4,268,499

ANTIPERSPIRANT EMULSION COMPOSITIONS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jun. 7, 1979, Ser. No. 46,590

Int. Cl.[3] **A61K** *7/38, 31/695*

U.S. Cl. 424—68 **4 Claims**

1. A water-in-oil antiperspirant emulsion composition having improved efficacy consisting essentially of

(a) 30 to 60 parts by weight of an aqueous solution of an astringent as a discontinuous phase,

(b) 27 to 67.5 parts by weight of a volatile liquid having a normal boiling point of less than 250° C. as a continuous phase, said volatile liquid being selected from the group consisting of methylsiloxane fluids having the average unit formula

$$(CH_3)_aSiO_{(4-a)/2}$$

wherein a has an average value of from 2 to 3, inclusive, and paraffinic hydrocarbon fluids,

(c) 0.5 to 3 parts by weight of an organic water-in-oil surfactant having an HLB value of from 2 to 10, inclusive,

(d) 1 to 5 parts by weight of a polydiorganosiloxane-polyoxyalkylene copolymer containing at least one polydiorganosiloxane segment and at least one polyoxyalkylene segment, said polydiorganosiloxane segment consisting essentially of

$$R_bSiO_{(4-b)/2}$$

siloxane units wherein b has a value of from 0 to 3, inclusive, there being an average value of approximately 2 R radicals per silicon for all siloxane units in the copolymer, and R denotes a radical selected from the group consisting of methyl, ethyl, vinyl, phenyl and a divalent radical bonding said polyoxyalkylene segment to the polydiorganosiloxane segment, at least 95 percent of all R radicals being methyl; and said polyoxyalkylene segment having an average molecular weight of at least 1000 and consisting of from 0 to 50 mol percent polyoxypropylene units and from 50 to 100 mol percent polyoxyethylene units, at least one terminal portion of said polyoxyalkylene segment being bonded to said polydiorganosiloxane segment, any terminal portion of said polyoxyalkylene segment not bonded to said polydiorganosiloxane segment being satisfied by a terminating radical; the weight ratio of polydiorganosiloxane segments to polyoxyalkylene segments in said copolymer having a value of from 2 to 8, and

(e) 1 to 5 parts by weight of an organic oil-in-water surfactant having an HLB value of from 11 to 17, inclusive, the total of (a) plus (b) plus (c) plus (d) plus (e) being 100 parts by weight.

4,268,500

METHOD FOR TREATING HAIR TO PREVENT DRYNESS

Grace Cloninger, 15932 Georgia Ave., Paramount, Calif. 90723

Filed Feb. 19, 1980, Ser. No. 122,367

Int. Cl.[3] **A61K** *7/06*

U.S. Cl. 424—70 **3 Claims**

1. A method for treating the scalp to combat dryness and produce lustrous hair comprising:

rubbing about one-half cup of yogurt onto to the scalp and hair;

covering the treated scalp and hair with an airtight cap;

maintaining the hair in a covered condition for at least five minutes;

removing the cap; and

rinsing the scalp and hair to remove the residual yogurt.

4,268,501

SUPPOSITORIES CONTAINING A COMPOUND HAVING BRONCHODILATOR ACTIVITY

Yutaka Konno, Omiya, and Shigeo Kawamura, Urawa, both of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1979, Ser. No. 101,012
Claims priority, application Japan, Dec. 29, 1978, 53-165426
Int. Cl.[3] A61K *31/79, 31/225*
U.S. Cl. 424—80 7 Claims

1. A stable suppository comprising:

(A) an anti-asthmatic effective amount of 3-formylamino-4-hydroxy-α-benzyl alcohol.½fumarate mono-hydrate as the active ingredient, compounded with

(B) a stabilizing effective amount of stabilizing components comprising polyvinyl pyrrolidone and at least one member selected from the group consisting of cyclodextrin, dextran and magnesium metasilicate aluminate, and

(C) a suppository base.

4,268,502

COSMETIC TONIC FORMULATION

Joe O. Martin, Martinsville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 20, 1980, Ser. No. 179,625
Int. Cl.[3] A61K *31/745*
U.S. Cl. 424—83 1 Claim

1. A skin tonic formulation consisting essentially of, in percent by weight:

Ingredients	Percent
deionized water	80.12
polyethylene and polypropylene glycol	2.00
glyoxyldiureide	0.20
polyethylene glycol (300)	9.00
imidazolidinyl urea	0.40
denatured alcohol	7.00
methyl p-hydroxybenzoate	0.10
propyl p-hydroxybenzoate	0.05
polyoxyethylene (60) sorbitan fatty acid ester	0.30
polyoxyethylene (10) oleyl ether	0.50
menthol	0.03
fragrance	0.30

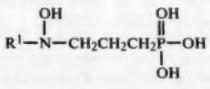
4,268,503

ANTIBACTERIAL COMPOSITION

Hiroshi Imanaka, Osaka, and Minoru Nishida, Kyoto, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Kyoto, Japan

Continuation-in-part of Ser. No. 942,364, Sep. 14, 1978, which is a continuation-in-part of Ser. No. 877,944, Feb. 15, 1978. This application Aug. 14, 1979, Ser. No. 66,314
Int. Cl.[3] H61K *35/00*
U.S. Cl. 424—114 7 Claims

1. An antibacterial composition comprising a phosphonic acid or derivative of the formula:



wherein R^1 is formyl, or its pharmaceutically acceptable salt and an aminoglycoside antibiotic selected from the group consisting of gentamicin, tobramycin, dibekacin, amikacin, bekanamycin or their pharmaceutically acceptable salts, wherein the phosphonic acid derivative and the aminoglycoside are contained in the composition in a ratio of 1:1 to 4:1.

4,268,504

COMPOSITION AND METHOD FOR THE TREATMENT OF ANIMAL HOOVES

John G. Harrington, 58913 Carmelita Cir., Yucca Valley, Calif. 92284, and William W. Hornbeck, P.O. Box 461, Mira Loma, Calif. 91752

Continuation-in-part of Ser. No. 841,301, Oct. 12, 1977, abandoned. This application Sep. 28, 1979, Ser. No. 80,080
Int. Cl.[3] A61K *33/34, 33/00*
U.S. Cl. 424—143 12 Claims

1. A composition for the treatment of animal hooves, that is suitable for indirect application to said hooves by ground seeding techniques, comprised of a blend of an inert carrier selected from the group consisting of salt, sand and dirt, and a mixture of effective amounts of copper sulfate, zinc sulfate, and iron sulfate.

3. A method of treating the hooves of numerous animals at one time comprised of: seeding a composition composed of a blend of an inert carrier and a mixture of effective amounts of copper sulfate, zinc sulfate, and iron sulfate onto the surface of an area where said animals will be allowed to walk, sprinkling said area with water, and causing said animals to walk or stand upon said surfaces at intermittent time intervals whereby the active ingredients of said mixture will contact said hooves.

4,268,505

PHARMACEUTICAL COMPOSITION COMPRISING A NITROGEN-CONTAINING POLYSACCHARIDE AND AN ANTIBIOTIC AGENT, AND A METHOD OF TREATING AN INFECTIOUS DISEASE THEREWITH

Chikao Yoshikumi, Kunitachi; Yoshio Omura, Tanashi, and Tetsuya Hotta, Hoya, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 896,209, Apr. 13, 1978, abandoned. This application Aug. 31, 1979, Ser. No. 71,482
Int. Cl.[3] A01K *31/70*
U.S. Cl. 424—180 15 Claims

1. A pharmaceutical composition for the treatment of a bacterial infection due to a strain of a pathogenic bacterial species which has come to be resistant to treatment with conventional antibiotics, which comprises an antibacterially effective amount of an antibiotic and a nitrogen-containing polysaccharide obtainable by extracting mycelia of a fungus belonging to the genus Coriolus from the family Polyporaceae of Basidiomycetes with an aqueous solvent, having a molecular weight of from 5,000 to 300,000, as determined by the ultracentrifugal method and an elementary composition of 42.0 to 46.0% of carbon, 5.3 to 7.0% of hydrogen, 0.5 to 8.0% of nitrogen and the balance of oxygen, easily soluble into water, however, not soluble into acetone, pyridine, chloroform and hexane, showing characteristic absorption bands at 840 cm^{-1} and 890 cm^{-1} in an infrared spectrum, and a specific rotation $[\alpha]_D^{25}$ of 0° to 50° and having a ratio of saccharide portion to protein portion within a range of 62:38 to 97:3 as indicated by proton nuclear magnetic resonance spectroscopy, said antibiotic being capable of combatting said bacterial infectious disease when administered together with said nitrogen-containing polysaccharide.

13. A method for treating a bacterial infection induced by a strain of a bacteria species, which has developed a resistance to a specific antibiotic, which comprises administering to a host in need of such treatment an antibacterially effective amount of an antibiotic in combination with a nitrogen-containing polysaccharide obtainable by extracting mycelia of basidiomycetes belonging to the genus Coriolus of Polyporaceae with an aqueous solvent, said polysaccharide having a molecular weight of from 5,000 to 300,000 as determined by ultracentifugation, containing 42.0 to 46.0% carbon, 5.3 to 7.0% hydrogen and 0.5 and 8.0% nitrogen, having a specific rotatory power of 0° to +50.0°, having good solubility in water but being insoluble in acetone, pyridine, chloroform and hexane, showing characteristic absorption at 840 cm^{-1} and 890 cm^{-1} in the infrared spectrum and having a ratio of saccharide portion to protein portion of from 62/38 to 97/3 as indicated by nuclear

magnetic resonance spectroscopy, said antibiotic being capable of combatting said strain of bacteria species when administered with said nitrogen-containing polysaccharide.

4,268,506

THIENYLMETHYL-THIOPHOSPHORIC ACID ESTERS

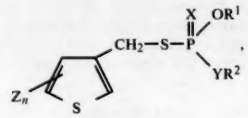
Annegrit Baumann, Mannheim, and Heinrich Adolphi, Limburgerhof, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Federal Republic of Germany

Filed Jul. 5, 1979, Ser. No. 54,862

Int. Cl.³ A61K *31/38;* **C07D** *333/14*

U.S. Cl. 424—202 **5 Claims**

1. A thienylmethyl-thiophosphoric acid ester of the formula



where R^1 denotes methyl or ethyl, R^2 is linear or branched alkyl of a maximum of 5 carbon atoms, X denotes oxygen or sulfur, Y denotes sulfur, Z denotes halogen, and n denotes one of the integers 0, 1, 2 and 3.

4. A pesticide comprising a solid or liquid carrier and at least one thienylmethyl-thiophosphoric acid ester of the formula I.

4,268,507

MONOPHOSPHONATE COMPOUNDS AS HYPOGLYCEMIC AND/OR ANTIARTHEROGENIC AGENTS

Lan Nguyen Mong, Nyon, Switzerland, assignor to Symphar S.A., Geneva, Switzerland

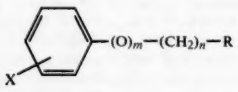
Filed Jan. 30, 1980, Ser. No. 116,809

Claims priority, application United Kingdom, Feb. 13, 1979, 04992/79

Int. Cl.³ A61K *31/66;* **C07F** *9/38, 9/40*

U.S. Cl. 424—217 **8 Claims**

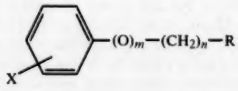
1. Monophosphonate compounds of formula (I),



(I)

where R is $—PO_3Me_2$, $—PO_3Et_2$, $—PO_3H_2$ or $—PO_3Na_2$; X is an halogen; m is 0 or 1; and n is 2, 3, 4, 5 or 6.

5. Hypoglycemic and/or antiatherogenic composition which comprises as active ingredient an effective amount of a monophosphonate compound of formula (I),



(I)

where R is $—PO_3Me_2$, $—PO_3Et_2$, $—PO_3H_2$ or $—PO_3Na_2$; X is a halogen; m is 0 or 1; and n is 0, 1, 2, 3, 4, 5 or 6.

4,268,508

O-ALKYL-S-BRANCHED ALKYL-ALKYLPHOSPHONODITHIOATE

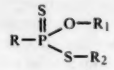
Mohamed A. Fahmy, Edison, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Filed Dec. 28, 1979, Ser. No. 107,819

Int. Cl.³ A01N *57/20;* **C07F** *9/40*

U.S. Cl. 424—222 **26 Claims**

1. A compound of the formula



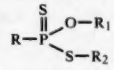
in which

R is an alkyl of 1 to 8 carbon atoms;

R_1 is an alkyl of 1 to 8 carbon atoms; and

R_2 is alpha branched alkyl of 4 to 8 carbon atoms.

11. A method for controlling insects and nematodes which comprises applying thereto a pesticidal amount of a compound of the formula



in which

R is an alkyl of 1 to 8 carbon atoms;

R_1 is an alkyl of 1 to 8 carbon atoms; and

R_2 is alpha branched alkyl of 4 to 8 carbon atoms.

4,268,509

NEW CEPHEM COMPOUNDS AND PROCESSES FOR PREPARATION THEREOF

Tsutomu Teraji, Osaka; Kazuo Sakane, Amagasaki, and Jiro Goto, Suita, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

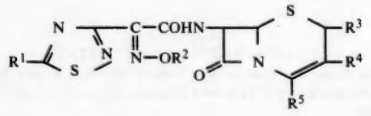
Filed Jun. 20, 1979, Ser. No. 50,216

Claims priority, application United Kingdom, Jul. 10, 1978, 29357/78; Dec. 29, 1978, 50334/78

Int. Cl.³ A61K *31/545;* **C07D** *501/56*

U.S. Cl. 424—246 **76 Claims**

1. Syn-isomer of cephem compounds of the formula:



wherein

R^1 is amino or a protected amino,

R^2 is lower alkyl,

R^3 is hydrogen,

R^4 is a heterocyclicthio(lower)alkyl moiety selected from the group consisting of thiadiazolylthio(lower)alkyl, thiazolinylthio(lower)-alkyl, tetrazolylthio(lower)alkyl, triazolylthio(lower)alkyl, pyrazinylthio(lower)alkyl, tetrazolopyridazinylthio(lower)alkyl or dihydrotriazolopyridazinylthio(lower)alkyl, each of which may be substituted with one or two lower alkyl, lower alkenyl, hydroxy(lower)alkyl, amino(lower)alkyl, protected amino(lower)alkyl, lower alkenylthio, lower alkoxy(lower)alkyl, lower alkylthio(lower)alkyl, lower alkanesulfonyl(lower)alkyl, carboxy, esterified carboxy, sulfo(lower)alkyl, di(lower)alkylamino(lower)alkyl, carboxy(lower)alkyl, amino, carboxy(lower)alkylthio, oxo, halo(lower)alkyl or lower alkylamino, in each the thio being linked to a carbon atom of the heterocyclic moiety, and

R^5 is a carboxy or a protected carboxy, and pharmaceutically acceptable salt thereof.

76. A pharmaceutical antibacterial composition comprising a compound of claim 1 or pharmaceutically acceptable salt thereof in association with a pharmaceutically acceptable, substantially non-toxic carrier or excipient.

4,268,510
1,3-BENZOXAZINE TRICHLOROMETHYL DERIVATIVES, COMPOSITIONS AND USE

Francis T. Boyle, and Michael A. Taylor, both of Congleton, England, assignors to Imperial Chemical Industries Limited, London, England

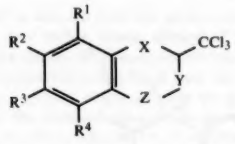
Filed Aug. 28, 1979, Ser. No. 70,492

Claims priority, application United Kingdom, Sep. 12, 1978, 36532/78

Int. Cl.[3] **A61K** *31/535;* **C07D** *265/22*

U.S. Cl. 424—248.53 **10 Claims**

1. A heterocyclic trichloromethyl compound of the formula:



I

wherein:

X is an oxygen atom, Y is a radical of the formula —NR^5— wherein R^5 is a hydrogen atom, a 1-4C alkyl or alkanoyl radical or a phenyl radical which is optionally substituted by one or more halogen atoms, nitro radicals or 1-4C alkyl, alkoxy or halogenoalkyl radicals, Z is a carbonyl radical;

and R^1, R^2, R^3 and R^4, which may be the same or different, are each a hydrogen or halogen atom, an cyano, formyl, hydroxy, hydroxyiminomethyl, nitro or sulfo radical, a carboxy radical or an alkali metal, alkaline earth metal or ammonium salt thereof, or a radical of the formula R^7, OR^7, $O.CH_2R^{10}$, $CO.OR^7$, $O.COR^7$, $O.COR^{10}$, $CO.NR^8R^9$, $NH.SO_2R^{10}$, NR^8R^9, $NR^8.COR^9$, $NH.CH_2R^{10}$, $SO_2.NR^8R^9$ or $SO_2.OR^7$ wherein R^7 is a 1-4C alkyl radical, R^8 and R^9, which may be the same or different, are each a hydrogen atom or a 1-4C alkyl radical and R^{10} is a phenyl radical optionally substituted as defined above for R^5; but excluding those compounds wherein:

(i) X is an oxygen atom, Y is an imino radical and R^1, R^2, R^3 and R^4 are all hydrogen atoms; or

(ii) X is an oxygen atom, Y is an imino radical and either R^2 and R^4 are hydrogen atoms and R^1 and R^3 are chlorine atoms, or R^3 is an acetamido radical and R^1, R^2 and R^4 are hydrogen atoms; or

(iii) X is an oxygen atom, Y is an acetylimino radical, R^3 is an acetamido radical and R^1, R^2 and R^4 are all hydrogen atoms.

7. A method for reducing ruminal methane production and/or for increasing the proportion of propionic acid in the ruminal fluid, in domesticated ruminant animals, which comprises orally administering to the animals an effective amount of a heterocyclic trichloromethyl compound of the formula I wherein R^1, R^2, R^3, R^4, X, Y and Z have any of the meanings defined in claim 1.

4,268,511
3-AMINO(1H,3H)QUINAZOLINE-2,4-DIONE DERIVATIVES AND THEIR THERAPEUTIC APPLICATIONS

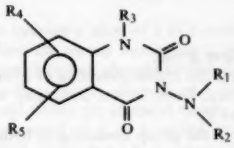
Rene Baronnet, Garches, and Raymond Callendret, Le Pecq, both of France, assignors to Berri-Balzac, Suresnes, France

Filed Mar. 11, 1980, Ser. No. 130,176

Int. Cl.[3] **A61K** *31/47;* **C07D** *239/80, 413/04*

U.S. Cl. 424—248.57 **9 Claims**

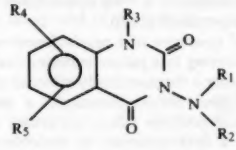
1. A compound selected from the compounds having the formula:



(I)

in which R_1 and R_2 represent independently from each other a member of the group selected from a hydrogen atom, a C_{1-4} alkyl group, an acetyl group and a benzoyl group, R_1 and R_2 not being simultaneously hydrogen, and, when taken together with the nitrogen atom to which they are attached, R_1 and R_2 may form a morpholino radical; R_3 represents a C_{1-4} alkyl; and R_4 and R_5 represent independently a member of the group selected from a hydrogen atom, a halogen atom, a C_{1-4} alkyl group and a C_{1-4} alkoxy group; and the therapeutically acceptable acid addition salts of the above compounds.

7. Therapeutic composition, having particularly an anxiolytic and diuretic action, and also a spasmolytic action of non-α-adrenalytic nature on the unstriated muscle fibres, comprising a therapeutically effective amount of a compound selected from the compounds having the formula:



(I)

in which R_1 and R_2 represent independently from each other a member of the group selected from a hydrogen atom, a C_{1-4} alkyl group, an acetyl group and a benzoyl group, R_1 and R_2 not being simultaneously hydrogen, and, when taken together with the nitrogen atom to which they are attached, R_1 and R_2 may form a morpholino radical; R_3 represents a C_{1-4} alkyl; and R_4 and R_5 represent independently a member of the group selected from a hydrogen atom, a halogen atom, a C_{1-4} alkyl group and a C_{1-4} alkoxy group; and the therapeutically acceptable acid addition salts of the above compounds, together with a pharmaceutically acceptable carrier.

4,268,512
SUBSTITUTED 2,3-ALKYLENE BIS (OXY) BENZAMIDES AND DERIVATIVES AND METHOD OF PREPARATION

Michel Thominet; Gerard Bulteau, both of Paris; Jacques Acher, Itteville, and Claude Collignon, Saint Remy les Chevreuse, all of France, assignors to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France, Paris, France

Division of Ser. No. 821,123, Aug. 2, 1977, Pat. No. 4,186,135. This application Feb. 23, 1979, Ser. No. 14,680

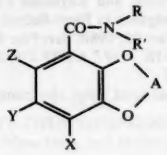
Claims priority, application France, Aug. 4, 1976, 76 23835

Int. Cl.[3] **A61K** *31/505;* **C07D** *405/14;* **A61K** *31/495;* **C07D** *405/12*

U.S. Cl. 424—250 **36 Claims**

1. Substituted 2,3-alkylene bis(oxy)benzamides, their pharmaceutically acceptable acid addition salts, their quaternary

ammonium salts, their oxides, and their dextrorotatory and levorotatory isomers, having the formula:



wherein:

A is a C_{2-3} alkylene group;

X is selected from the group consisting of hydrogen, halogen, C_{1-4} alkoxy, nitro, amino, acetamino and azimido when joined to Y,

Y is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino, C_{1-4} alkylsulfonyl, sulfamoyl, C_{1-4} alkylsulfamoyl, C_{1-4} dialkylsulfamoyl, adamantylsulfamoyl and azimido when joined to X or Z;

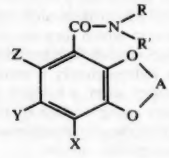
Z is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino and azimido when joined to Y; and

R is a hydrogen atom and R′ is a pyrimidinyl group, or

R is a 4-alkylpiperazinyl group and R′ is a hydrogen atom, or

is a diazabicyclononyl, a 4-alkylpiperazinyl or a 4-(2-pyrimidinyl) piperazinyl group.

19. A method of treatment of a psychofunctional disorder comprising administering to a patient suffering from said psychofunctional disorder a therapeutically effective amount of a substituted 2,3-alkylene bis(oxy)benzamide, a pharmaceutically acceptable acid addition salt, a quaternary ammonium salt, an oxide, or a dextrorotatory or levorotatory isomer thereof, having the formula:



wherein:

A is a C_{1-3} alkylene group;

X is selected from the group consisting of hydrogen, halogen, C_{1-4} alkoxy, nitro, amino, acetamino and azimido when joined to Y,

Y is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino, C_{1-4} alkylsulfonyl, sulfamoyl, C_{1-4} alkylsulfamoyl, C_{1-4} dialkysulfamoyl, adamantylsulfamoyl and azimido when joined to X or Z;

Z is selected from the group consisting of hydrogen, halogen, nitro, amino, acetamino and azimido when joined to Y; and

R is a hydrogen atom and R′ is a pyrimidinyl group, or

R is a 4-alkylpiperazinyl group and R′ is a hydrogen atom, or

is a diazabicyclononyl, a 4-alkylpiperazinyl or a 4-(2-pyrimidinyl) piperazinyl group.

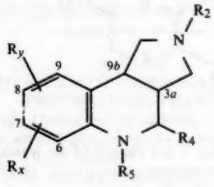
4,268,513

PYRROLO [3,4-c]QUINOLINE COMPOUNDS AND PHARMACEUTICAL COMPOSITIONS, METHODS FOR THEIR USE AND PREPARATION

Howard S. Shapiro, Wilmington, Del., assignor to ICI Americas Inc., Wilmington, Del.

Filed Oct. 22, 1979, Ser. No. 87,458
Int. Cl.[3] **A61K** *31/47;* **C07D** *215/00*
U.S. Cl. 424—258 **16 Claims**

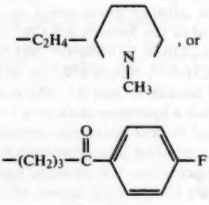
1. A pharmaceutical composition in the form of a tablet, capsule or injectable which comprises a pharmaceutically acceptable carrier and a pharmaceutically effective amount of a hexahydropyrrolo [3,4-c]quinoline of the following Formula (I):



(I)

wherein

R_2 is hydrogen, C_1–C_6 normal alkyl, C_3–C_6 cycloalkyl, C_1–C_6 hydroxyalkyl, C_3–C_6 hydroxycycloalkyl, phenyl, benzyl,



, or

;

R_4 is hydrogen, C_1–C_3 alkyl or phenyl;

R_5 is hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, acetyl, benzyl or CH_2CF_3,

or when R_4 and R_5 are alkyl, they combine to form a 5-, 6- or 7-membered ring; and

R_x and R_y, which may be the same or different, are hydrogen, halogen, trifluoromethyl, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_3 alkoxy, C_1–C_3 alkylthio, hydroxy or cyano, or when R_x and R_y are alkoxy on adjacent carbons, they combine to form a 5-membered methylene dioxy or a 6-membered ethylene dioxy ring,

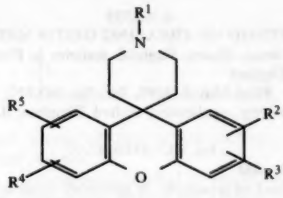
and the pharmaceutically-acceptable acid addition salts thereof.

4,268,514
1'-SUBSTITUTED XANTHENE-9-SPIRO-4'-PIPERIDINE DERIVATIVES AND ANALGESIC COMPOSITIONS THEREOF

Ronald H. B. Galt, and Robert J. Pearce, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 539,742, Jan. 9, 1975, Pat. No. 4,001,419. This application Oct. 14, 1976, Ser. No. 732,293
Claims priority, application United Kingdom, Feb. 4, 1974, 5016/74
The portion of the term of this patent subsequent to Jan. 4, 1994, has been disclaimed.
Int. Cl.[3] A61K *31/445*; C07D *491/107*
U.S. Cl. 424—267 **3 Claims**

1. A compound selected from the group consisting of xanthene derivatives of the formula:



wherein R^1 is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms, alkenyl of 3 to 4 carbon atoms wherein the double bond is separated from the nitrogen atom of the spiropiperidine ring by at least one carbon atom, haloalkenyl of 3 carbon atoms wherein the double bond is separated from the nitrogen atom of the spiropiperidine ring by a carbon atom, phenylalkyl of 7 to 8 carbon atoms, and hydroxyalkyl of 2 to 3 carbon atoms wherein the oxygen atom is separated from the nitrogen atom of the spiropiperidine ring by at least two carbon atoms, and R^2, R^3, R^4 and R^5 are selected from the group consisting of hydrogen, halogen, trifluoromethyl, methoxy, methylthio, hydroxy, acetoxy, cinnamoyloxy and methylsulphinyl, provided that at least two of R^2, R^3, R^4 and R^5 stand for hydrogen, or a pharmaceutically-acceptable acid-addition salt thereof.

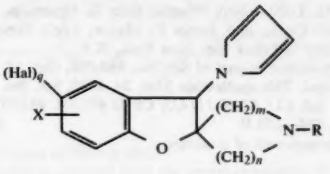
3. An analgesic pharmaceutical composition which comprises as active ingredient an analgesically-effective amount of a xanthene derivative, or a non-toxic pharmaceutically-acceptable acid-addition salt thereof, claimed in claim **1**, in association with a major amount of a non-toxic, pharmaceutically-acceptable diluent or carrier.

4,268,515
SPIRO[DIHYDROBENZOFURAN-PIPERIDINES AND-PYRROLIDINES], PHARMACEUTICAL COMPOSITIONS THEREOF AND METHODS OF USE THEREOF

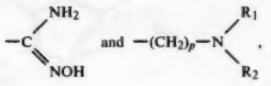
Richard C. Effland, Bridgewater; Larry Davis, Sergeantsville, and Joseph T. Klein, Bridgewater, all of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Feb. 4, 1980, Ser. No. 118,146
Int. Cl.[3] C07D *521/00*; A61K *31/445, 31/395*
U.S. Cl. 424—267 **25 Claims**

1. A compound depicted by the formula

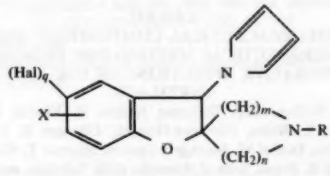


wherein R is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxycarbonyl where the alkoxy moiety has 1 to 6 carbon atoms, phenoxycarbonyl, cyano, phenylalkyl where the alkyl moiety has 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms, phenylalkanoyl where the alkanoyl moiety has 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, benzoylalkyl where the alkyl moiety has 1 to 6 carbon atoms,

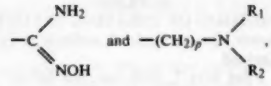


where p is an integer of 2 or 3; and R_1 and R_2 are the same or different and are hydrogen and lower alkyl of 1 to 6 carbon atoms; X is hydrogen and alkyl of 1 to 6 carbon atoms; Hal is halogen; q is an integer of 0 or 1; m is an integer of 1 or 2 and n is an integer of 1, 2 or 3 where the sum of m and n is 3 or 4; and the pharmaceutically acceptable acid addition salts thereof.

25. A method of alleviating pain in a mammal which comprises administering to a mammal a pain alleviating effective amount of a compound of the formula



wherein R is hydrogen, alkyl of 1 to 6 carbon atoms, alkoxycarbonyl where the alkoxy moiety has 1 to 6 carbon atoms, phenoxycarbonyl, cyano, phenylalkyl where the alkyl moiety has 1 to 6 carbon atoms, alkanoyl of 1 to 6 carbon atoms, phenylalkanoyl where the alkanoyl moiety has 1 to 6 carbon atoms, hydroxyalkyl of 1 to 6 carbon atoms, benzoylalkyl where the alkyl moiety has 1 to 6 carbon atoms,



where p is an integer of 2 or 3 and R_1 and R_2 are the same or different and are hydrogen and lower alkyl of 1 to 6 carbon atoms; X is hydrogen and alkyl of 1 to 6 carbon atoms; Hal is halogen; q is an integer of 0 or 1, m is an integer of 1 or 2 and n is an integer of 1, 2 or 3, where the sum of m and n is 3 or 4; and the pharmaceutically acceptable acid addition salts thereof.

4,268,516
[1]BENZOTHIOPYRANO[4,3-C]PYRAZOLES AS IMMUNOREGULATORY AGENTS

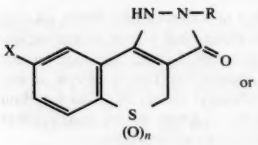
Joseph G. Lombardino, Niantic; Ivan G. Otterness, Ledyard, both of Conn., and James F. Muren, Lee's Summit, Mo., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 950,386, Oct. 11, 1978, abandoned. This application Mar. 24, 1980, Ser. No. 133,652

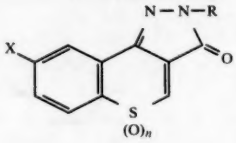
Int. Cl.[3] A61K *31/415;* C07D *495/04, 487/00*

U.S. Cl. 424—273 P 22 Claims

1. A compound of structure:



or



wherein

n is an integer of value from 0 to 2;

R is phenyl; phenyl monosubstituted with chloro, bromo, fluoro, methyl, methoxy, nitro or trifluoromethyl; or phenyl disubstituted with chloro in other than 2,6-position; and

X is hydrogen or chloro.

17. A method of suppressing body immune responses in a mammal, other than a rabbit, in need of such treatment comprising orally or parenterally administering a body immune suppressing amount of a compound of claim 1 to said mammal.

4,268,517
PHARMACEUTICAL COMPOSITION AND THERAPEUTICAL METHOD FOR TREATING DEGENERATIVE AFFECTIONS OF THE ARTICULAR CARTILAGE

Paul J. Niebes, Grez Doiceau; Andras B. Vincze, Brussels; Joseph L. Roba, Ciernont-Houyet; Georges E. Lambelin, Brussels; Daniel M. Matagne, Taviers; Etienne T. Hanon, and Michel R. Franz, both of Brussels, all of Belgium, assignors to Continental Pharma, Brussels, Belgium

Filed Aug. 30, 1979, Ser. No. 71,077

Int. Cl.[3] A61K *31/35*

U.S. Cl. 424—283 4 Claims

1. A method for treating a degenerative disease of the articular cartilage which comprises administering to a host suffering from said degenerative disease, an effective amount of (+)-catechin.

4,268,518
METHOD OF TREATING CYSTITIS

David M. Turner, Quorn, England, assignor to Fisons Limited, Suffolk, England

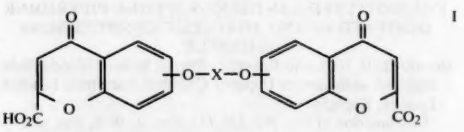
Filed May 7, 1980, Ser. No. 147,497

Claims priority, application United Kingdom, May 19, 1979, 17483/79

Int. Cl.[3] A61K *31/35*

U.S. Cl. 424—283 10 Claims

1. A method of treatment of mammalian cystitis, which method comprises oral administration or instillation into the bladder of an effective amount of a compound of the formula I,



I

wherein X is a polymethylene chain containing 3 to 7 carbon atoms inclusive, which chain may be substituted by an —OH group,

or a pharmaceutically acceptable salt, alkyl C 1 to 10 ester, mono-alkyl C 1 to 10 amide, di-alkyl C 1 to 10 amide or unsubstituted amide thereof, as active ingredient, to a patient having cystitis.

4,268,519
METHOD OF TREATING OTITIS MEDIA

David M. Turner, Quorn, England, assignor to Fisons Limited, Suffolk, England

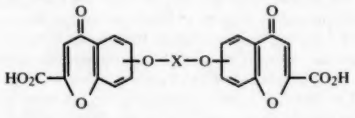
Filed May 8, 1980, Ser. No. 147,917

Claims priority, application United Kingdom, Jun. 5, 1979, 19516/79

Int. Cl.[3] A61K *31/35*

U.S. Cl. 424—283 7 Claims

1. A method of treatment or secretory otitis media, which method comprises administration of a compound of the formula I:



I

wherein X is a polymethylene chain containing 3 to 7 carbon atoms inclusive, which may be substituted by an —OH group,

or a pharmaceutically acceptable salt, alkyl C 1 to 10 ester, mono-alkyl C 1 to 10 amide, di-alkyl C 1 to 10 amide or unsubstituted amide thereof, as active ingredient, to a patient having secretory otitis media.

4,268,520
INSECTICIDAL AND NEMATICIDAL CARBAMATES

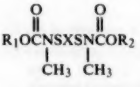
Gary D. Grantham, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 899,298, Apr. 24, 1978, Pat. No. 4,225,615. This application May 21, 1980, Ser. No. 151,901

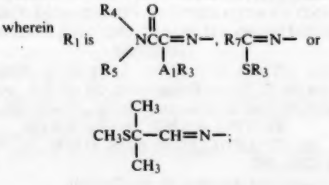
Int. Cl.[2] A01N *43/12;* C07D *307/86*

U.S. Cl. 424—285 9 Claims

1. A compound of the formula

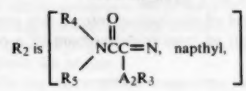


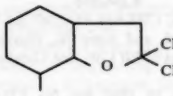
wherein

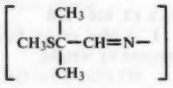


or

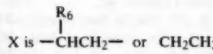
-continued







wherein



R_3 is alkenyl, alkynyl of three or four carbons, or alkyl of one to four carbons;

R_4 and R_5 are independently alkyl of one to four carbons, CH_3O, or cycloalkyl of three to five carbons or R_4 and R_5 are taken together to form an alkylene bridge of four to six carbons;

provided that R_4 and R_5 contain a total of not more than seven carbons and that R_4 and R_5 are not both simultaneously OCH_3 or both cycloalkyl;

R_6 is hydrogen or methyl;

R_7 is alkyl of 1–4 carbons; and

A_1 and A_3 are independently oxygen or sulfur.

7. A method for control of insects or nematodes which comprises applying to a locus to be protected an insecticidally or nematicidally effective amount of a compound of claim 1.

4,268,521

SYNERGISTIC INSECTICIDAL COMBINATIONS COMPRISING METHOMYL AND 2-DIHALOVINYL-3,3-DIMETHYLCYCLOPROPANECARBOXYLATES

James J. Knabke, Pinole, Calif., assignor to FMC Corporation, Philadelphia, Pa.

Filed Dec. 22, 1976, Ser. No. 753,039

Int. Cl.[3] A01N *37/00, 37/08, 37/02, 37/06*

U.S. Cl. 424—298 **4 Claims**

1. A synergistic insecticidal composition consisting essentially of about 10 parts methomyl per 1 part 3-phenoxybenzyl 2-(2,2-dichlorovinyl)-3,3-dimethylcyclopropanecarboxylate.

4,268,522

13,14-DIHYDRO-15-ALKENYL- AND 13,14-DIHYDRO-15-ALKYNYL PROSTAGLANDINS AND ANALOGS THEREOF

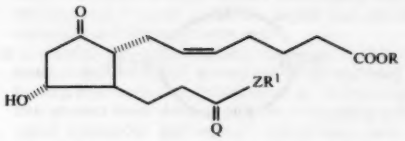
James F. Eggler, Stonington, and Hans-Jurgen E. Hess, Old Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 695,420, Jun. 14, 1976, abandoned. This application Oct. 18, 1979, Ser. No. 85,907

Int. Cl.[3] G07C *171/00*

U.S. Cl. 424—305 **5 Claims**

1. A compound of the formula



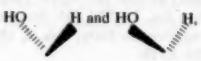
wherein

R is hydrogen or biphenylyl;

R^1 is a member selected from the group consisting of hydrogen and alkyl having from one to eleven carbon atoms;

Q is a member selected from the group consisting of oxygen,

and mixtures of



and Z is -C≡C-.

4,268,523

1,9-DIHYDROXYOCTAHYDROPHENANTHRENES AND INTERMEDIATES THEREFOR

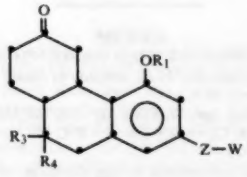
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495. This application Sep. 24, 1979, Ser. No. 78,476

Int. Cl.[3] A01N *35/00;* **C07C** *49/788*

U.S. Cl. 424—308 **14 Claims**

1. A compound selected from the group consisting of those having the formula



wherein R_1 is hydrogen, benzyl, benzoyl or alkanoyl of 1 to 5 carbon atoms;

R_3 is selected from hydrogen, methyl and ethyl;

R_4 is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzyl;

Z is selected from:

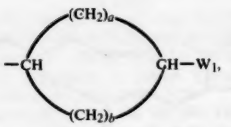
(a) alkylene having from one to nine carbon atoms;

(b) $—(alk_1)_m—X—(alk_2)_n—$ wherein each of (alk_1) and (alk_2) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

m and n are each 0 or 1;

X is selected from O, S, SO and SO_2; and

W is selected from hydrogen, methyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W_1 is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5.

13. A process for producing analgesia in a mammal which comprises administering to the mammal an analgesia producing quantity of a compound of claim 1.

4,268,524

METHOD OF TREATING ABNORMAL LIPOPROTEIN RATIOS WITH ACYLCARNITINE

Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

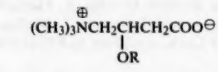
Continuation-in-part of Ser. No. 8,392, Feb. 1, 1979. This application Jul. 2, 1980, Ser. No. 165,351

Claims priority, application Italy, Feb. 3, 1978, 47900 A/78; May 15, 1978, 49354 A/78

Int. Cl.³ A61K *31/22, 31/23*

U.S. Cl. 424—311 **5 Claims**

1. The method of increasing the level of high density lipoproteins so as to selectively reduce the ratio of (a) low density and very low density lipoproteins to (b) high density lipoprotein in the plasma of a patient in which said ratio is abnormally high which comprises orally or parenterally administering to said patient in a single or multiple dose administration regimen an amount of an acylcarnitine of the formula



wherein R is acetyl, propionyl, butyryl, hydroxybutyryl, hexanoyl, octanoyl, decanoyl, palmitoyl, stearoyl, acetoacetyl, succinyl, isovaleryl, crotonyl, linoleyl, linolenyl or arachidonyl or a pharmaceutically acceptable salt thereof which is sufficient upon administration according to said regimen to reduce said abnormally high ratio.

4,268,525

AMIDOXIMETHER INSECTICIDES

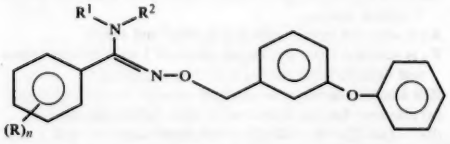
Jill H. Paul, Edgewater, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 28, 1980, Ser. No. 144,758

Int. Cl.³ A01N *37/52;* **C07C** *123/00*

U.S. Cl. 424—326 **18 Claims**

1. Insecticidal compounds having the formula:



wherein R is halogen, C_1–C_6 alkyl, C_1–C_6 alkoxy, C_2–C_6 alkenyl, C_1–C_6 alkylthio, C_1–C_6 haloalkyl, trifluoromethyl, trifluoromethoxy, difluoromethoxy, trifluoromethylthio, difluoromethylthio, C_1–C_6 alkylamino, cyano; nitro, C_1–C_6 carboalkoxy, C_1–C_6 alkylsulphonyl, C_1–C_6 alkoxy C_1–C_6 alkyl, C_2–C_6 haloalkenyl, or C_1–C_6 acyl; n is 0–5, R^1 and R^2 are hydrogen, C_1–C_6 alkyl, C_3–C_6 cycloalkyl, C_1–C_6 alkylcycloalkyl (C_3–C_6), or C_2–C_6 alkenyl.

13. The method of combatting insects that comprises contacting them with an insecticidal amount of a compound of claim 1.

4,268,526

COSMETIC CREAM FORMULATION

Ovidio Vargas, Carmel, and Anne M. Herrold, Brownsburg, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 20, 1980, Ser. No. 179,626

Int. Cl.³ A61K *7/02*

U.S. Cl. 424—358 **1 Claim**

1. A skin cream formulation consisting essentially of, in percent by weight:

Ingredients	Percent
light mineral oil	4.45
polyethylene homopolymer (1500 m. wt., density 0.91 g/cc)	2.50
undecanoic triglyceride	2.00
squalane	5.00
distilled lanolin alcohol	0.55
white beeswax	1.00
polydimethyl cyclosiloxane	9.00
triglyceryl diisostearate	4.00
isopropyl myristate	5.00
propyl p-hydroxybenzoate	0.10
quaternary bentonite	0.40
deionized water	59.00
methyl p-hydroxybenzoate	0.20
70% sorbitol solution	5.00
imidazolidinyl urea	0.30
urea	0.50
glyoxyldiureide	0.20
DL-pantothenyl alcohol	0.50
cis-1-(3-chloroallyl)-3,5,7-triaza-1-azoniaadamantane chloride	0.10
fragrance	0.20

4,268,527

METHOD FOR PRODUCING CACAO BUTTER SUBSTITUTE

Takaharu Matsuo; Norio Sawamura, both of Osaka; Yukio Hashimoto, Kishiwada, and Wataru Hashida, Osaka, all of Japan, assignors to Fuji Oil Company, Ltd., Japan

Filed Nov. 7, 1979, Ser. No. 92,096

Claims priority, application Japan, Nov. 21, 1978, 53-144736

Int. Cl.³ A23D *5/02;* **C12P** *7/64*

U.S. Cl. 426—33 **7 Claims**

1. In a method for producing a cacao butter substitute by transesterifying fats and oils comprising glycerides containing the oleyl moiety at the 2-position with one or more fatty acids, by using a lipase having reaction specificity to 1,3-position of triglycerides, the improvement which comprises transesterifying said fats and oils with an aliphatic alcohol ester of stearic acid, palmitic acid or mixtures thereof in the presence of not more than 0.18% by weight of water based on the total weight of the reaction mixture.

4,268,528

PREPARATION OF CHEESE FROM ULTRAFILTERED MILK

Jean Montigny, St. Hilaire Saint Mesmin, France, assignor to Harle & Lechopiez, France

Filed Oct. 17, 1977, Ser. No. 842,806

Claims priority, application France, Oct. 18, 1976, 76 31257

Int. Cl.³ A23C *19/02*

U.S. Cl. 426—40 **18 Claims**

1. Process for producing an acidified partially decalcified

dairy raw material useful in the manufacture of cheeses from a starting milk which comprises the steps of:

(1) Coagulating the starting milk and flocculating the casein therein by acidifying the milk by lactic fermentation to a pH of about 4.4 or less

(2) Ultrafiltering the acidified coagulated milk to produce a flowable acidified retentate which contains the flocculated casein and whose dry extract corresponds to that of the cheese to be made, and

(3) Cooling the retentate after step (2) to a temperature between 0° and 4° C. and stirring the same while avoiding foam production to deflocculate the flocculated casein in said acidified retentate to produce a starting milk suitable for coagulation with rennet to produce cheese.

4,268,529

NUTRITIVE COMPOSITION AND METHOD OF PREPARING SAME

Rachel D. Davis, deceased, late of Kinston, N.C., and by First Citizens Bank & Trust Co., executor, P.O. Box 849, Kinston, N.C. 28501

Continuation-in-part of Ser. No. 830,122, Sep. 2, 1977, abandoned, which is a continuation-in-part of Ser. No. 634,667, Nov. 25, 1975, Pat. No. 4,070,488. This application Jun. 18, 1979, Ser. No. 49,431

The portion of the term of this patent subsequent to Jan. 24, 1995, has been disclaimed.

Int. Cl.[3] **A23L** *1/30*

U.S. Cl. 426—72 **3 Claims**

1. The method of preparing a highly stable nutritive composition in water miscible dry form, and suitable for mixing in a conventional beverage or adding to other food products, and comprising the steps of preparing an aqueous solution comprising water, gelatin, and metabolically available iron, drying the solution to produce a dried product, adding dry ascorbic acid to the dried product, with the iron and ascorbic acid being present in such quantities as are suitable for supplementing the human diet and materially assisting in assuring the intake of the recommended daily allowances thereof, and the gelatin being present in such quantity to effectively retard the deterioration of the ascorbic acid in the presence of the iron and without gelling the solution.

4,268,530

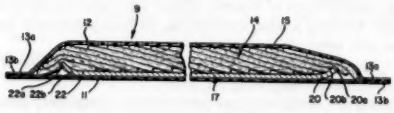
PACKAGE FOR SLICED COMESTIBLE

Ihor Wyslotsky, 5328 W. 123rd Pl., Alsip, Ill. 60658

Filed Oct. 4, 1979, Ser. No. 81,647

Int. Cl.[3] **B65D** *85/72*

U.S. Cl. 426—121 **8 Claims**



1. An improved package for containing a slab of a sliced comestible product with the slices disposed in an overlapping array to display a portion of each slice, said package comprising:

a backing board formed from a semi-rigid material for supporting slices of the comestible product, said backing board being generally rectangular and planar in shape and having rounded corners with a smooth radius, said rounded corners being angled upwardly and extending towards and embedded in the supported sliced comestible product when in assembled configuration, said backing board having one dimension which is less than the longitudinal dimension of the slab of sliced comestible product and a second dimension transverse to said first dimension which is less than the width of the overlapping array of sliced comestible product thereby overlapping and embedding said rounded, upwardly angled and extending corners of said backing board; and

an enveloping film of substantially transparent flexible sheet material disposed tightly around and snugly enclosing said backing board and the overlapping array of sliced comestible product borne thereon, with the overlapping array of sliced comestible interveningly cooperating with the edges of said rounded, upwardly-angled and extending corners of said backing board to shield and cushion said edges from said film, thereby to permit said film to substantially conform to the contours of the overlapping array of sliced comestible product without being punctured by said edges of said upwardly-angled and extending corners of said backing board.

4,268,531

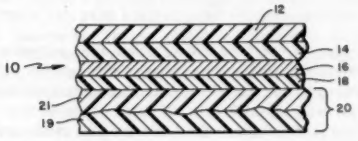
CONDIMENT PACKAGE AND MATERIAL FOR MAKING SAME

Philip C. Whiting, Jr., Holyoke, Mass., assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Nov. 10, 1976, Ser. No. 740,429

Int. Cl.[3] **B65D** *65/40, 85/72*

U.S. Cl. 426—126 **7 Claims**



1. In a package comprising a condiment and formed of a flexible, heatsealable web consisting of

(1) an outer printable surface ply

(2) a metallic foil ply and

(3) an innermost heat-sealable ply in contact with said condiment

the improvement wherein said innermost ply is less than about 0.0015 inches in thickness and is formed of

(a) an ionomer making up a minor portion of said thickness and placed nearest said foil,

(b) low density polyethylene forming the major portion of said thickness and placed remote from said foil.

4,268,532

PROCESS FOR EXTRUDING AND FORMING PORTION CONTROLLED FROZEN FOOD PRODUCTS

Vincent E. Bernard, Richardson, Tex., assignor to The Jimmy Dean Meat Company, Inc., Dallas, Tex.

Continuation of Ser. No. 832,200, Sep. 12, 1977, abandoned, which is a continuation of Ser. No. 610,301, Sep. 4, 1975, Pat. No. 4,124,339, and a continuation-in-part of Ser. No. 526,146, Nov. 22, 1974, abandoned. This application Feb. 12, 1979, Ser. No. 11,531

The portion of the term of this patent subsequent to Dec. 18, 1995, has been disclaimed.

Int. Cl.[3] **A01K** *43/00*

U.S. Cl. 426—231 **2 Claims**

1. The method of producing discrete food products having a selected weight comprising:

forming a semi-fluid mixture of the product,

pumping said mixture to an extrusion location,

sensing the flow of said fluid pumped to the extrusion location by a sealed bladder mounted in the flow of said fluid mixture to the extrusion location,

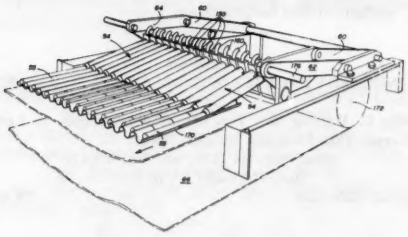
communicating changes in pressure in the sealed bladder to a fluid filled bellows means to move the bellows means,

generating an electrical signal in response to the movement of the bellows means,

operating the pump in response to the electrical signal to provide a uniform flow of said fluid mixture to the extrusion location,

extruding said mixture into and through a plurality of nozzles onto a moving conveyor, thereby forming the mixture into elongated continuous lengths having a preselected uniform cross-section,

directing said continuous lengths of said semi-fluid mixture through a chilling location to chill and firm the preselected cross-sectional shape of said lengths until said lengths maintain their cross-sectional shape without support,



supporting the uniform cross-section after extrusion from said nozzles and during passage through said chilling location by the use of a structure connected to said conveyor which conforms to the shape of the bottom and at least a portion of the sides of the uniform cross-section of said extruded mixture, said structure extending along a length of and moving with the cross-section to maintain the cross-section until the mixture is firmed by chilling, and

dividing said lengths at periodic intervals to form a plurality of products having the same selected weight.

4,268,533

QUICK-SET LOW METHOXYL PECTIN COMPOSITION

Richard A. Williams, Putnam Valley; Andre J. Eydt, New York; Charles E. Lambert, Dobbs Ferry; Michael T. McGuire, Elmhurst; Walter W. Schulok, Stony Point, and Reuben H. Waitman, Pearl River, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Nov. 21, 1979, Ser. No. 96,590

Int. Cl.[3] A23L *1/06*

U.S. Cl. 426—577 **22 Claims**

1. A single packet dry mix low methoxyl pectin composition which is convertible to an edible, quick-setting smooth, uniform and continuous gel, free from grit and localized agglomeration upon dissolution in cold or ambient temperature water of varying water hardness which comprises:

(a) a low methoxyl pectin which has been co-dried with an amount of a buffer with a monovalent cation effective to protect the pectin from calcium ions present in the water and in the dry mix and a solubilizing amount of a readily soluble carrier;

(b) a slowly soluble calcium ion source in an amount sufficient for gel formation; and,

(c) a slowly dissolving edible acid in an amount which will provide a final pH of from about 3.5 to about 4.5 upon dissolution of the mix in water.

4,268,534

METHOD FOR PRODUCING HARD BUTTER

Tsukasa Kawada, Yachiyo, and Yukitaka Tanaka, Funabashi, both of Japan, assignors to Kao Soap Company, Tokyo, Japan

Filed Aug. 23, 1979, Ser. No. 69,086

Claims priority, application Japan, Aug. 25, 1978, 53-104204

Int. Cl.[3] A23D *5/00*

U.S. Cl. 426—607 **13 Claims**

1. A process for manufacturing hard butter which comprises the steps of;

(I) interesterifying an oil-and-fat material mixture comprising

(i) about 20 to 40% by weight of myristic acid triglyceride, and

(ii) about 60 to 80% by weight of at least one vegetable oil selected from the group consisting of rapeseed oil, soybean oil and corn oil, or a mixture of said vegetable oil and palm oil, and

(II) hydrogenating the interesterified oil-and-fat material obtained in step (I) under conditions wherein trans-unsaturated fatty acid triglycerides are produced as the major product until the melting point of the mixture reaches 34° to 40° C.

4,268,535

PROCESS FOR GROWING A SUPERFICIAL DIELECTRIC STRUCTURE UPON A SUBSTRATE, MADE OF A CHEMICAL COMPOUND, COMPRISING AT LEAST TWO ELEMENTS

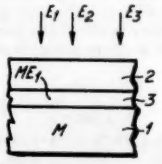
Michel Croset, and Gonzalo Velasco, both of Paris, France, assignors to Thomson-CSF, Paris, France

Continuation of Ser. No. 940,664, Sep. 8, 1978, abandoned. This application Aug. 27, 1979, Ser. No. 70,043

Claims priority, application France, Sep. 12, 1977, 77 27470

Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—38 **5 Claims**



1. A process for growing a superficial dielectric structure on a gallium arsenide substrate comprising the steps of:

(a) depositing on said gallium arsenide substrate an oxygen permeable layer of zirconia doped with calcium oxide and thus forming a solid electrolyte, oxygen-permeable layer on said substrate, and thereafter;

(b) subjecting the layer-coated substrate to treatment in an atmosphere comprising oxygen,

the layer-coated substrate substantially completely devoid of oxides produced on the gallium arsenide layer.

4,268,536

METHOD FOR DEPOSITING A METAL ON A SURFACE

William M. Beckenbaugh, East Amwell Township, Hunterdon County, N.J.; Patricia J. Goldman, Naugatuck, Conn., and Ted D. Polakowski, Jr., Bergenfield Township, Bergen County, N.J., assignors to Western Electric Company, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 967,549, Dec. 7, 1978, abandoned. This application Jan. 2, 1980, Ser. No. 108,996

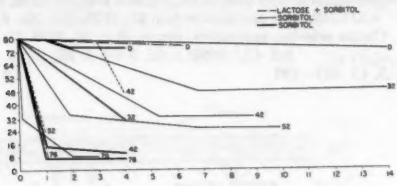
Int. Cl.[3] B05D *3/06*

U.S. Cl. 427—54.1 **9 Claims**

1. A method of depositing a metal on a substrate which comprises:

(a) coating the substrate with a sensitizing solution compris-

ing a reducible salt of non-noble metal, a primary reducing agent selected from the group consisting of 2,7 anthraquinone disulfonic acid, alkali metal salts of 2,7 anthraquinone disulfonic acid and mixtures thereof, and a secondary reducing agent;



(b) drying the coated substrate;

(c) storing the dried substrate for at least 3 days at relative humidities of at least 32%; and

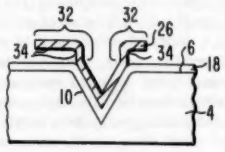
(d) exposing the dried substrate to ultraviolet light to form a catalytic layer.

4,268,537

METHOD FOR MANUFACTURING A SELF-ALIGNED CONTACT IN A GROOVED SEMICONDUCTOR SURFACE

Lawrence A. Goodman, Plainsboro, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 3, 1979, Ser. No. 99,598
Int. Cl.³ H01L *21/28*
U.S. Cl. 427—88 **13 Claims**



1. A method for fabricating a contact aligned within a groove, comprising:

providing a semiconductor substrate having a first major surface;

forming an apertured mask on the first surface;

generating a groove in the first surface in an area exposed by the aperture;

forming a layer of electrode material on the groove surface, said layer extending beyond the groove and onto the mask;

stripping the mask; and

removing the electrode material which extends beyond the groove.

4,268,538

HIGH-PRESSURE, HIGH-TEMPERATURE GASEOUS CHEMICAL METHOD FOR SILICON OXIDATION

Monte M. Toole, Mill Valley, and Raphael Klein, Los Altos, both of Calif., assignors to Atomel Corporation, Mountain View, Calif.

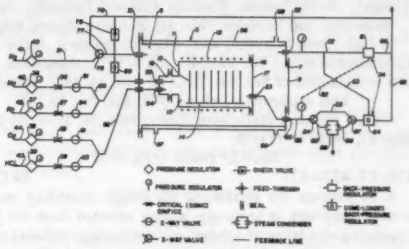
Division of Ser. No. 775,963, Mar. 9, 1977, Pat. No. 4,167,915. This application Mar. 29, 1979, Ser. No. 24,989
Int. Cl.³ H01L *21/316*
U.S. Cl. 427—93 **8 Claims**

1. A high-pressure, high-temperature silicon oxidation process comprising:

mounting silicon wafers to be oxidized in an enclosed quartz-walled reaction chamber mounted within a pressure chamber;

heating said reaction chamber;

pressurizing said reaction chamber with oxygen and hydrogen gases; and



pressurizing said pressure chamber with a gas to equalize the pressure across the wall of said reaction chamber.

4,268,539

LIQUID COATING COMPOSITION FOR FORMING TRANSPARENT CONDUCTIVE FILMS AND A COATING PROCESS FOR USING SAID COMPOSITION

Muneo Nakayama, Tokyo; Toshihiro Nishimura, Kawasaki; Akira Hashimoto, Yokohama; Hisashi Nakane, and Teruo Kimura, both of Kawasaki, all of Japan, assignors to Tokyo Denshi Kagaku Kabushiki Kaisha, Kanagawa, Japan

Filed Nov. 14, 1978, Ser. No. 960,652
Claims priority, application Japan, Nov. 24, 1977, 52/140871
Int. Cl.³ B05D *5/12*; C03C *17/23*; B05D *3/02, 1/02*
U.S. Cl. 427—108 **32 Claims**

1. A liquid coating composition for forming a transparent conductive film, which comprises a solution of:

(a) an incomplete reaction product of indium nitrate with a β-diketone in which the reaction may be allowed to proceed until a yellowish, yellow, brownish or brown color is obtained;

(b) an activator for imparting a high electrical conductivity to said transparent conductive film; and

(c) an organic solvent other than a β-diketone.

4,268,540

PARTICLES FOR MAGNETIC RECORDING

Lawrence M. Scott, Newark; Irving W. Wolf, Los Altos, and Yu C. Lee, Newark, all of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 945,276, Sep. 25, 1978, abandoned, which is a continuation of Ser. No. 837,837, Sep. 29, 1977, abandoned. This application Feb. 13, 1980, Ser. No. 121,196
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—127 **2 Claims**

1. The process of making magnetic particles consisting essentially of the following steps:

a. forming a suspension of acicular gamma ferric oxide in an aqueous solution of a salt of a metal selected from the group consisting of barium, strontium, lead and calcium, and a soluble trivalent iron salt, adding an alkali to form a precipitate and drying the resulting mixture of the precipitated decomposition products of said salts and acicular gamma ferric oxide,

b. heating said dry mixture in an atmosphere containing oxygen at a temperature of at least 300° F. to produce a magnetic particle having a core of acicular gamma ferric oxide and a coating comprising a mixture of an oxide of metal selected from barium, strontium, lead and calcium and trivalent iron oxide.

4,268,541

PROCESS FOR PRODUCING A MATERIAL HAVING A VAPOR-DEPOSITED METAL LAYER, AND PROCESS FOR PRODUCING A RECORDING MATERIAL

Tomoaki Ikeda; Satoshi Yoshida; Hideaki Takeuchi; Fumiaki Shinozaki, and Keishiro Kido, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 921,540, Jul. 3, 1978, abandoned, which is a continuation of Ser. No. 768,671, Feb. 14, 1977, abandoned.
This application Oct. 2, 1979, Ser. No. 81,221
Claims priority, application Japan, Feb. 16, 1976, 51-16036; Sep. 17, 1976, 51-111516
Int. Cl.[3] B05D *1/36, 7/04*
U.S. Cl. 427—177 14 Claims

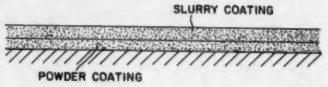
1. A process for producing an image recording material which comprises, in sequence, a layer selected from the group consisting of a layer of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound which is free from pinholes and scratches, an organic material layer and a layer of an organic resin or an organic resin composition, which process comprises sequentially vapor depositing a layer of a member selected from the group consisting of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound on a moving support by evaporating a member selected from said group into the vapor state and then condensing the same on said moving support to form the layer selected from the group consisting of a layer of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound having a thickness of about 30 to about 600 nm on said support, then evaporating said organic material into the vapor state and then condensing the same on the thus deposited layer selected from the group consisting of a layer of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound on the moving support to form the organic material layer having a thickness of about 30 to about 600 nm, wherein said organic material is a compound selected from the group consisting of homopolymers and copolymers having a recurring unit derived from a member selected from the group consisting of acrylic acid or methacrylic acid; rosin, abietic acid, neoabietic acid, dihydroabietic acid, tetrahydroabietic acid, d-pimaric acid, phthalic acid, isophthalic acid, terephthalic acid, succinic acid, sulfanilic acid, Rhodamine B, saturated fatty acids containing 14 to 29 carbon atoms, a phthalocyanine, a monosaccharide and an oligosaccharide, winding up the support having the layer selected from the group consisting of a layer of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound and the organic material layer, unwinding said support, and subsequently forming a layer of a member selected from the group consisting of an organic resin or an organic resin composition on the organic material layer, wherein the vapor depositing is carried out in a vapor deposition chamber for forming and depositing vapors from the evaporating material for forming the layer selected from the group consisting of a layer of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound being vapor deposited on said moving support in a manner such that the layer selected from the group consisting of a layer of a metal, a layer having different metals in contact with each other, a layer of a metal alloy, a layer having a metal and a metal compound in contact with each other and a layer of a metal compound is not in contact with any material other than the support.

4,268,542

PROCESS FOR FORMING MULTI-LAYER COATINGS

Takao Sakakibara, Kasugai, and Haruhiko Okazaki, Iwakura, both of Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 752,086, Dec. 20, 1976, Pat. No. 4,137,349. This application Jan. 25, 1979, Ser. No. 6,803
Claims priority, application Japan, Dec. 26, 1975, 50-155964
Int. Cl.[3] B05D *3/02, 3/08, 3/10*
U.S. Cl. 427—195 4 Claims



1. A process for forming a multilayer coating including at least two layers on a metal substrate which consists of coating at least portions of said substrate with an undried lower coating layer of a powder coating composition which is at least one member selected from the group consisting of (A) a thermoplastic resin which is selected from the group consisting of vinyl chloride homopolymers and copolymers, polyethylene or polypropylene resins, nylon resins, linear saturated polyesters, cellulose derivatives and chlorinated polyethers, and (B) a thermosetting resin which is selected from the group consisting of an epoxy resin composition comprising (1) at least one epoxy resin selected from bisphenol type, novolak type and alicyclic type epoxy resins and (2) a curing agent selected from dicyandiamide or derivative thereof, acid anhydride, aromatic diamine, BF_3-amine complex, imidazole and dihydrazide, a polyester resin composition comprising (a) a polyester which is prepared by a condensation reaction of polyhydric alcohol and at least one of a saturated polybasic acid and an unsaturated polybasic acid, and (b) a curing agent selected from acid anhydrides, melamine resins, blocked isocyanate compounds, a compound having at least two glycidyl groups in the molecule, and ethylenic crosslinking monomers, acrylic resins and curing agents, and self-crosslinking acrylic resins, and before melting said powder coating applying thereon at least once a slurry paint comprising thermosetting synthetic resin particles to form a laminate coating, the slurry paint comprising 10 to 70% by weight of resin particles dispersed in a medium composed mainly of water, said resin particles having an average particle size of 4 to 30μ and a softening point of 5° to 120° C., and baking the resulting laminate coating at a temperature higher than the film-forming temperature of the coating layer having the highest film-forming temperature among respective coating layers.

4,268,543

PROCESS AND DEVICE FOR PRODUCING THE REFRACTORY LINING OF METALLURGICAL VESSELS

Erich Höffken, Dinslaken, and Karl-Dieter Beckers, Neunkirchen-Seelscheid, both of Fed. Rep. of Germany, assignors to Martin & Pagenstecher GmbH, Köln-Mülheim, Fed. Rep. of Germany

Filed Sep. 19, 1978, Ser. No. 943,840
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1977, 2742415
Int. Cl.[3] B05D *7/22*
U.S. Cl. 427—230 10 Claims

1. A process for forming a refractory liner on the interior wall of a vessel which interior wall is co-axial to the principal axis of the vessel which comprises initially shaping a refractory mass into lumps, thereafter slinging said lumps centrifugally onto said interior wall in a direction normal thereto while said vessel is at a standstill, the refractory mass being slung in rapid succession to form a mass jet.

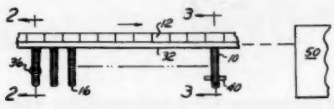
4,268,544
METHOD OF APPLYING FRICTION MATERIALS TO THREADED ARTICLE

Richard B. Wallace, Bloomfield Hills, Mich., assignor to The Oakland Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 892,505, Apr. 3, 1978. This application Sep. 17, 1979, Ser. No. 76,335

Int. Cl.³ B05D *1/02, 5/00, 7/00*

U.S. Cl. 427—264 **14 Claims**



1. The method of making a threaded metal article having a circumferentially uniform tightly adhered solid shaped deposit of a friction-producing resin in the thread grooves in which the deposit fills the bottom of the thread groove, has a depth sufficient to interfere with and frictionally engage at least the crests of the thread of a mating article, and extends completely around the threaded portion of the article, which comprises applying an extremely thin film of a very dilute solution of a flow-promoting polymer in a volatile solvent uniformly over the area on which the resin is to be deposited, supporting the article with its thread axis vertical and applying at a limited zone within said area a quantity of a flowable essentially aqueous fluid mixture of a powder of a cured thermoplastic friction-producing resin, the flow-promoting polymer film operating to cause the fluid mixture to flow along the thread grooves to form a circumferentially uniform deposit of the fluid mixture extending completely around the threaded portion of the article and which fills the bottom of the thread groove to a depth sufficient to engage the crests of the threads of a mating article, thereafter drying the deposit to eliminate substantially all of the water to leave the shaped deposit in the form of a mass of cohered discrete resin particles, heating the article to fuse the resin particles into a substantially continuous shaped mass, and cooling the article.

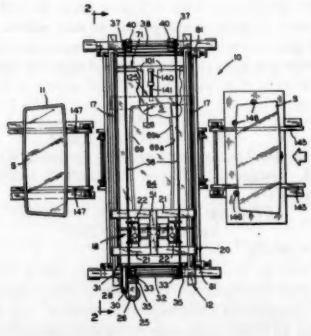
4,268,545
METHOD OF AND APPARATUS FOR PRINTING A PATTERN ON A SUBSTRATE

Joseph W. Hodulik, Genoa, Ohio, assignor to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Jul. 30, 1979, Ser. No. 61,616

Int. Cl.³ B05D *1/32*

U.S. Cl. 427—282 **10 Claims**



1. A method of applying a peripheral band onto a flat substrate comprising: positioning a substrate on a supporting surface, engaging at least the opposite edge portions of said substrate with segments having edges complementary to and engageable with the entirety of said substrate opposite edge portions, placing a stencil screen having a pattern formed therein on said substrate, positioning said pattern to orient a portion thereof projecting slightly outwardly past the marginal edge of said substrate, supporting said projecting portion of said pattern on said segments to maintain said pattern and screen in a horizontal plane while applying coating material through said pattern onto the upper surface of said substrate to form a peripheral band thereon.

5. Apparatus according to claim **4**, wherein said substrate engaging means comprises at least a pair of segments having opposed edges complementary to said opposite edge portions of said substrate.

4,268,546
METHOD OF MAKING NON-WOVEN FABRICS FROM SYNTHETIC FIBERS

James E. Schwartz, and Kent B. McReynolds, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 4,418, Jan. 18, 1979, abandoned. This application Jun. 25, 1980, Ser. No. 162,708

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—393.5 **5 Claims**

1. A method for making non-woven fabrics having a soft, cloth-like feel from synthetic fibers in which a polymer in the form of an aqueous dispersion is incorporated into a web of synthetic fibers, water is removed and the retained polymeric binder is cured which comprises impregnating the synthetic fibers with an aqueous binder system containing a polymer, the solids of which consist essentially of from 35 to 60 weight percent of a hard monomer, 0 to 45 weight percent of butadiene or isoprene, 10 to 50 weight percent of an acrylate ester having from 1 to 8 carbon atoms in the ester portion and 1 to 5 weight percent of an ethylenically unsaturated mono- or dicarboxylic acid.

4,268,547
COATING PROCESS

Alan J. Backhouse, South Ascot, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 897,172, Apr. 17, 1978, abandoned. This application Aug. 13, 1979, Ser. No. 66,298

Claims priority, application United Kingdom, Jul. 19, 1977, 30236/77

Int. Cl.³ B05D *1/02, 7/16*

U.S. Cl. 427—385.5 **6 Claims**

1. A process for the production of a surface coating upon a substrate which comprises applying by spray to the substrate surface a composition comprising:

(a) a film-forming polyester resin which is selected from the group consisting of products of condensation of a polyhydric alcohol and a polycarboxylic acid and products of condensation of a polyhydric alcohol, a polycarboxylic acid and a constituent supplying the residue of a fatty acid derived from a natural drying, semi-drying or non-drying oil;

(B) a volatile organic liquid diluent in which the polyester resin (A) is dissolved;

(C) polymer microparticles of diameter 0.01 to 10 microns which are insoluble in the solution of the polyester rein (A) in the diluent (B) and are stably dispersed therein in a non-flocculated state by means of a steric barrier around the particles of polymer chains which are solvated by the said solution, in an amount of at least 3% of the aggregate weight of the resin (A) and the microparticles, which are insoluble in and stably dispersed in the solution of the polyester resin in the diluent (B),

said microparticles being further associated with an auxiliary polymer which is soluble in the volatile organic liquid constituent (B) of the composition and which also is compatible with the film-forming resin (A), and subsequently evaporating the

volatile diluent (B) and forming a polymer film upon the surface.

4,268,548

POLYVINYL CHLORIDE-PLASTISOL HAVING IMPROVED ADHESION

Christian Burba, Ascheberg-Herbern; Hans-Günter Volland, Unna, and Norbert Esper, Bergkamen, all of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

Filed Sep. 26, 1979, Ser. No. 79,089

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841923

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—387 **12 Claims**

1. A method which comprises applying to a substrate material a plastisol composition comprising a polymer of vinyl chloride and then baking the composition onto the substrate material at a temperature between about 100° C. and 200° C., said plastisol composition further comprising from 0.05 to 5 percent, by weight of said plastisol composition, of an adhesion improver which is a compound or compounds having an azomethine group and a silane group and wherein, if said azomethine group and said silane group are separately present in different compounds, then said compound having a silane group is an aminosilane.

8. A plastisol composition comprising a polymer of vinyl chloride together with an adhesion improver which is a compound or compounds having an azomethine group and a silane group and wherein, if said azomethine group and said silane group are separately present in different compounds, then said compound having a silane group is an aminosilane.

4,268,549

SYNTHETIC RESIN POWDER AND COATING AGENTS CONTAINING THE SAME

Herbert Fink, Bickenbach; Norbert Suetterlin, Ober-Ramstadt; Horst Dinklage, Darmstadt-Arheilgen, and Willi Tilch, Reinheim, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,541

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—393.5 **7 Claims**

1. A synthetic resin powder of latex particles having an average particle size between 1 micron and 5 microns, which particles can be partially or completely loosely aggregated to form larger particles, said synthetic resin being a cross-linked copolymer of 75 to 99.5 percent by weight of a monomer mixture of methyl methacrylate and isobutyl methacrylate in a weight ratio of 1:3 to 3:1, 0.5 to 10 percent by weight of a cross-linking comonomer having at least two polymerizable double bonds, and 0 to 24.5 percent by weight of a further different ethylenically-unsaturated comonomer copolymerizable therewith.

2. A coating agent containing a volatile liquid component, a film-forming binder, and a synthetic resin powder of latex particles as in claim 1.

6. A method for the preparation of a non-blocking and non-tacky coating on a solid substrate, which method comprises coating said substrate with a coating agent as in claim 2 and evaporating the volatile component thereof to form a film on the substrate.

4,268,550

METERED FINISH

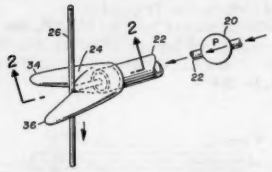
Louis B. Williams, Jr., Walnut Hill, Fla., assignor to Monsanto Company, St. Louis, Mo.

Filed Jul. 2, 1979, Ser. No. 54,386

Int. Cl.³ B05D *1/28*

U.S. Cl. 427—429 **12 Claims**

1. In a process for applying finish to a yarn running at least 2500 meters per minute wherein said finish is metered through a passageway just prior to application to said yarn, the improvement comprising inhibiting the variable influence of air travelling with said running yarn upon said finish in said passageway.



2. In combination with a finish applicator wherein finish is metered through a passageway just prior to application to a yarn, the improvement comprising means for inhibiting the variable influence of air travelling with said running yarn upon said finish in said passageway.

4,268,551

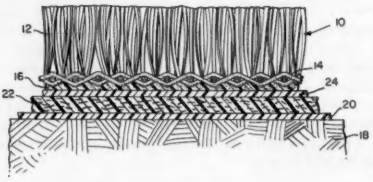
ARTIFICIAL GRASS SURFACE AND METHOD OF INSTALLATION

Mack W. Moore, Jr., Dalton, Ga., assignor to Cavalier Carpets, Dalton, Ga.

Filed Oct. 24, 1979, Ser. No. 87,671

Int. Cl.³ E01C *7/00*

U.S. Cl. 428—17 **16 Claims**



1. A method for adhering an artificial grass carpet product to a soil surface comprises preping a predetermined area of the soil surface to remove all debris and provide a defined compact surface within said predetermined area, coating said compact surface with a first stabilizing layer of plastic resin, allowing said first layer to cure and thereafter applying to said first cured stabilizing layer a second layer of resin reinforced with a fiberglas component, allowing said second layer to cure and thereafter applying a third adhesive layer to said cured reinforced layer of resin and applying to said adhesive layer the artificial grass carpet product so as to cause said carpet product to be bonded to said cured reinforced layer of resin.

4,268,552

AUTOMOTIVE FASCIA

Ilan Duvdevani, Leonia, and Lawrence Spenadel, Westfield, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 16, 1979, Ser. No. 30,078

Int. Cl.³ B60R *13/00*

U.S. Cl. 428—31 **25 Claims**

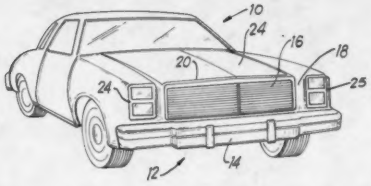
1. A rear or front automotive fascia for a motor vehicle formed from a polymeric composition which comprises:

(a) a neutralized sulfonated elastomeric polymer having about 10 to about 60 meq. of neutralized sulfonate groups per 100 grams of said neutralized sulfonated elastomeric polymer;

(b) about 10 to about 300 parts by weight of a crystalline polyolefinic resin having an Mn of about at least 2000 per

100 parts by weight of said neutralized sulfonated elastomeric polymer; and

(c) about 10 to about 50 parts by weight of a preferential plasticizer per 100 parts by weight of said neutralized sulfonated elastomeric polymer, wherein said preferential



plasticizer has a melting point of at least 25° C. and is selected from the group consisting of amides having about 10 to 22 carbon atoms, ureas and thioureas, carboxylic acids having at least 8 carbon atoms and metallic salts of said carboxylic acids and mixtures thereof.

4,268,553

METHOD FOR DOUBLE GLAZING UNITS

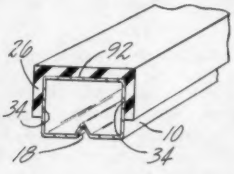
Taieb Marzouki, Chonberg, and Bernd Schweisser, Oberursel, both of Fed. Rep. of Germany, assignors to USM Corporation, Farmington, Conn.

Filed Apr. 2, 1979, Ser. No. 26,065

Claims priority, application United Kingdom, Apr. 5, 1978, 13235/78

Int. Cl.³ E06B *3/24, 3/64*

U.S. Cl. 428—34 **30 Claims**



24. A multi glass pane unit comprising two panes of glass separated by a spacer frame with peripheral portions of the panes bonded to the frame surface(s) by the cured residue of a sealant composition provided by combining two separate parts of the sealant composition and where one part comprises a tertiary amine and a polymeric composition having a softening point between about 50° C. to about 190° C. and the polymeric composition comprises a block copolymer having two polystyrene end blocks linked to a substantially saturated polyolefin rubber midblock, a heat reactive phenolic resin and a tackifying resin and where the other part comprises an epoxy resin, and a polymeric composition which is non-tacky at temperatures up to about 50° C. and can be applied as a hot melt at temperatures between about 150° C. to about 190° C. and the polymeric composition comprises a block copolymer having two polystyrene end blocks linked to a substantially saturated polyolefin rubber midblock, a tackifying resin and a liquid polybutene having a molecular weight of about 10,000 or less.

4,268,554

PROCESS FOR THE COATING OF GLASS SURFACES

Rainer Gras, An der Ziegelei 91, 4690 Herne 2, Fed. Rep. of Germany

Filed Sep. 29, 1978, Ser. No. 947,043

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1977, 2746006

Int. Cl.³ B65D *23/00;* B32B *7/02;* B05D *3/00, 3/02*

U.S. Cl. 428—35 **16 Claims**

1. A process for the coating of glass surfaces, to prevent the strewing of glass particles in case of bursting, with a transparent, duroplastic protective layer of more than 50 microns which comprises

first treating the clean glass surface with an aqueous or alcoholic silane skim coat,

drying said treated surface, and then

coating said dry surface with a mass of aliphatic or cycloaliphatic diisocyanates or mixtures thereof, or their reaction products with water in a mole ratio of 2:≦1 and a mixture of hydroxy-group-containing compounds comprising

40–80 wt.% trifunctional, hydroxy group-containing polyesters made of ω-hydroxy-carboxylic acids or their lactones with at least 4 C-atoms with an average molecular weight of 300 to 1400,

15–50 wt.% bifunctional, hydroxy group-containing polyesters made of ω-hydroxy carboxylic acids or their lactones with at least 4 C-atoms with an average molecular weight of 400 to 2000 and

2.5–20 wt.% aliphatic or cycloaliphatic diols, or mixtures thereof with respect to the total quantity of the polyols, and

optionally hardening said coated surface with additional heat.

9. The process of claim **1** wherein said glass surfaces are glass bottles.

10. Coated glass bottles with a transparent, duroplastic protective layer, prepared according to claim **9**.

4,268,555

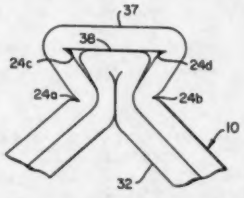
WIDE-FOLDING HINGE

John F. Kantz, Oxford, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,085

Int. Cl.³ B65D *5/36;* S11F *1/08*

U.S. Cl. 428—35 **5 Claims**



1. A wide-folding, linearly-hinged assembly of sheet members secured to each other in areas other than in the vicinity of the hinge comprising: an inner sheet member having at least one ply and a female linear score on the inner side thereof; and an outer sheet member having at least one ply and at least four linear female scores arranged in pairs on opposed sides of said member, each of said outer scores bridging its paired inner score and said opposed pairs bridging said score of said inner sheet member.

4,268,556

RIGID MAGNETIC RECORDING DISKS LUBRICATED WITH FLUORINATED TELECHELIC POLYETHER

Doulas G. Pedrotty, Baldwin, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 1,446, Jan. 8, 1979, abandoned. This application Dec. 18, 1979, Ser. No. 100,700

Int. Cl.[3] G11B *5/82*

U.S. Cl. 428—65 8 Claims

1. One or a stack of spaced-apart rigid magnetic recording disks, each recording surface of which is lubricated by a very thin coating of a fluorinated telechelic polyether polymer having a backbone comprising repeating $-C_aF_{2a}-O-$ units wherein a is an integer from 1 to 4, which backbone is terminated by at least one polar group, the μ^2/MW of the polymer being at least 19×10^{-4} Debye^2-moles/g, which coating resists removal upon cleaning the recording surfaces with isopropyl alcohol.

4,268,557

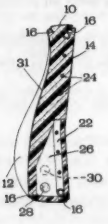
PROCESS AND MOLD FOR PRODUCING PADDED SEAT BACKS, AND THE PRODUCT OBTAINED

Roberto Bracesco, Corso Siracusa 123/2, Turin, Italy

Filed Jul. 5, 1979, Ser. No. 55,465

Int. Cl.[3] B32B *5/20;* B29D *27/00;* A47C *7/40*

U.S. Cl. 428—71 15 Claims



1. A process for producing the padded back portion of a motor vehicle seat having a framework with positioning means incorporated therein, comprising the steps of forming a covering of fluid-tight material having a slit extending over a length at least as great as the smallest width of the framework and a hole provided with a filler nozzle, inserting the framework through said slit into the covering, sealing the slit, placing the covering into a mold having the desired shape of the padded part to be produced, closing the mold, injecting polyurethane foam through the filler nozzle into the covering until the latter is completely filled, permitting the polyurethane foam to polymerize so that said framework is completely embedded in said polyurethane foam, and extracting the padded back part from the mold.

13. A padded back portion of a motor vehicle seat produced by the process of claim 1.

4,268,558

THERMAL STORAGE MATERIAL AND PROCESS FOR MAKING

Bryan J. Boardman, Chadds Ford, Pa., assignor to Boardman Energy Systems, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 812,420, Jul. 1, 1977, abandoned. This application Nov. 19, 1979, Ser. No. 95,462

Int. Cl.[3] B32B *5/18;* B05D *7/00;* F24H *7/00*

U.S. Cl. 428—71 24 Claims

1. A thermal storage structure comprising an inorganic latent heat storage component capable of storing thermal energy by way of its heat of fusion when heated at its melting point and wherein said latent heat storage component is essentially uniformly distributed throughout an inorganic open celled hydrophillic rigid foam component characterized in that said latent heat storage component is constrained to exhibit non-deteriorating latent heat storage capacity by virtue of its distribution throughout said inorganic open celled hydrophillic rigid foam component and wherein said structure is encapsulated with a material impervious to moisture.

4,268,559

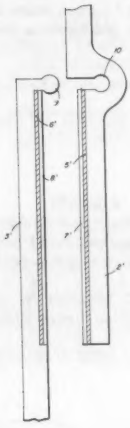
HEAT-SHRINKABLE ARTICLE

Jack H. Smuckler, Marblehead, Mass., assignor to Electronized Chemicals Corporation, Burlington, Mass.

Filed Sep. 22, 1978, Ser. No. 944,887

Int. Cl.[3] B65D *65/42;* B32B *3/02*

U.S. Cl. 428—99 7 Claims



1. A heat-shrinkable article comprising a heat-shrinkable sheet having two edges adapted to form a closure, said edges being heat-stable, at least one of said edges having thereon a silicone-based pressure sensitive adhesive adapted, after compression against the other of said edges to form a closure, to maintain said closure at a temperature sufficiently high to shrink said heat-shrinkable sheet.

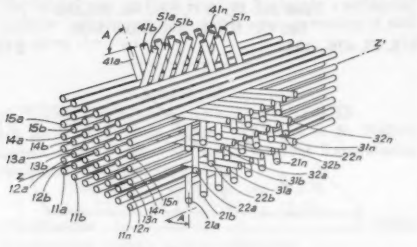
6. A process for making a heat-shrinkable article comprising the following steps: forming a heat-shrinkable sheet having two edges adapted to form a closure, said edges being heat-stable, and pressing against at least one of said edges a silicone-based pressure-sensitive adhesive adapted, after compression against the other of said edges to form a closure, to maintain said closure at a temperature sufficiently high to shrink said heat-shrinkable sheet.

7. A process for ensleeving an article comprising the following steps: wrapping about an article to be ensleeved a heat-shrinkable article comprising a heat-shrinkable sheet having two edges adapted to form a closure, said edges being heat-stable, at least one of said edges having thereon a silicone-based pressure sensitive adhesive adapted, after compression against the other of said edges to form a closure, to maintain said closure at a temperature sufficiently high to shrink said heat-shrinkable sheet, compressing said two edges together so as to form a closure, and heating said heat-shrinkable article to a temperature sufficiently high to shrink said heat-shrinkable sheet.

4,268,560
THREE-DIMENSIONAL STRUCTURE HAVING A PREFERENTIAL DIRECTION

Michel Maistre, Bordeaux, France, assignor to Societe Europeenne de Propulsion, Puteaux, France

Filed Mar. 20, 1979, Ser. No. 22,195
Claims priority, application France, Jun. 2, 1978, 78 16610
Int. Cl.[3] B32B 5/12; E04H 12/00
U.S. Cl. 428—105 10 Claims

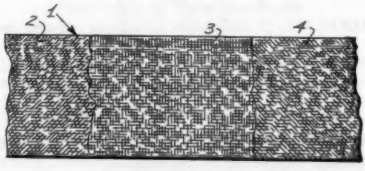


1. A three-dimensional structure having a preferential direction, consisting of a main bundle and four connecting bundles, said main bundle being constituted by main, rectilinear, filiform elements parallel to the preferential direction and disposed in parallel, regularly spaced apart rows extending along planes parallel to each other so as to form, in cross-section perpendicular to the preferential direction a network of square meshes, and each connecting bundle being constituted by rectilinear filiform connecting elements parallel to one another, the directions of the connecting bundles being different from one another and diagonal to the preferential direction, a first and a second connecting bundle being formed of elements disposed in first rows extending along first planes parallel to said planes defined by said rows of the main bundle, said first rows of the first and second bundles being disposed alternately in first gaps between successive ones of said rows of elements of the main bundle, and a third and a fourth connecting bundle being formed of elements disposed in second rows extending along second planes perpendicular to said first planes and parallel to the planes defined by alignments formed of opposite elements belonging to successive different ones of said rows of the main bundle, said second rows of the third and fourth bundles being disposed alternately in second gaps between successive ones of said alignments of elements of the main bundle.

4,268,561
MEANS AND METHOD OF MANUFACTURING A HIGH STRENGTH BAR

James D. Thompson, and Dennis E. Gates, both of 998 Weaver Rd., Bronson, Mich. 49028

Continuation of Ser. No. 888,351, Mar. 20, 1978, abandoned.
This application Jun. 29, 1979, Ser. No. 53,426
Int. Cl.[3] B32B 5/12
U.S. Cl. 428—111 9 Claims



1. A high strength bonded fiber member, comprising:
a set of woven laminations formed of high strength fibers, each lamination having longitudinally extending warp strands parallel to opposite sides thereof;
the laminations having woof strands at respectively different angles to their sides;
said set of laminations being continuous and repeatedly folded upon itself at opposite extremities of the fiber member;
the laminations being fully permeated with a bonding agent.

4,268,562
LASER RESISTANT CERAMIC COMPOSITE

James F. Bacon, Manchester, and Karl M. Prewo, Vernon, both of Conn., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

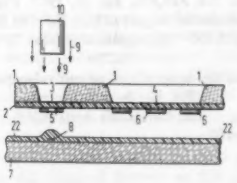
Filed Aug. 30, 1979, Ser. No. 72,734
Int. Cl.[3] B32B 5/12; B29G 5/00
U.S. Cl. 428—113 7 Claims

5. A hot pressed, biaxially oriented, alumina fiber reinforced ceramic composite comprising at least a first and second series of alumina fibers, wherein
a. said first series of alumina fibers are oriented in a parallel relationship to one another along a predetermined direction;
b. said second series of alumina fibers are juxtapositioned to said first series of fibers and are oriented in a parallel relationship to one another along a direction at right angles to that direction of said first series of fibers; and
c. a ceramic impregnant comprising about 95% by weight fused silica glass and about 5% by weight borosilicate glass permeating the interstices of said first and second series of fibers.

4,268,563
RADIATION MASK FOR PRODUCING STRUCTURAL CONFIGURATIONS IN PHOTO-SENSITIVE RESISTS BY X-RAY EXPOSURE

Dietrich Widmann, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 501,692, Aug. 29, 1974, abandoned.
This application May 25, 1979, Ser. No. 42,533
Claims priority, application Fed. Rep. of Germany, Sep. 17, 1973, 2346719
Int. Cl.[3] B32B 3/24, 7/02, 17/10, 33/00
U.S. Cl. 428—138 4 Claims



1. A multilayer radiation mask useful in controlling the selective activation of a photosensitive layer with X-ray radiation, in which registration of a first mark, associated with the mask, with a cooperable second mark, associated with the photosensitive layer, is visually effected by the use of incident radiation in the visible part of the spectrum to illuminate such registration marks through the mask, comprising:
a silicon dioxide carrier layer of approximately 1 to 10 micrometers in thickness, said silicon dioxide carrier layer being permeable to X-rays and visible light;
a silicon layer carried on a first surface of said carrier layer, said silicon layer including openings therethrough exposing areas of the adjacent first surface of said carrier layer;
an X-ray absorptive polyimide resin layer carried on an

opposite second surface of said carrier layer at an area thereof spanning an opening in said silicon layer; and

a first registration mark carried by said absorptive layer layer and adapted to cooperate with a similar second registration mark carried by the photosensitive layer,

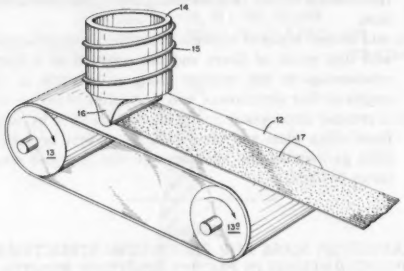
exposure with visible light through said mask causing the images of the first and second registration marks to be transmitted through said carrier layer so that the marks may be visually observed at the exposed face of said carrier layer to enable visual determination of the relative positions of the registration marks.

4,268,564

STRIPS OF METALLIC GLASSES CONTAINING EMBEDDED PARTICULATE MATTER

Mandayam C. Narasimhan, Flanders, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Dec. 22, 1977, Ser. No. 863,114
Int. Cl.³ B32B *15/16, 5/16*
U.S. Cl. 428—143 **5 Claims**



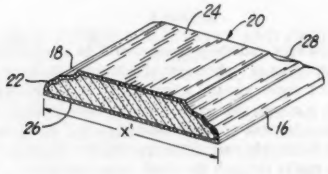
1. A strip of amorphous metal containing embedded particulate matter which protrudes from the top surface of the strip.

4,268,565

POST-PRESS MOLDING OF MAN-MADE BOARDS TO PRODUCE CONTOURED FURNITURE PARTS

Allan J. Luck, Marengo; John T. Clarke, and Michael R. Hoffman, both of St. Charles, all of Ill., assignors to Masonite Corporation, Chicago, Ill.

Division of Ser. No. 819,876, Jul. 28, 1977, Pat. No. 4,175,105, which is a continuation-in-part of Ser. No. 739,184, Nov. 5, 1976, Pat. No. 4,175,150. This application May 7, 1979, Ser. No. 36,759
The portion of the term of this patent subsequent to Nov. 20, 1996, has been disclaimed.
Int. Cl.³ B32B *3/30, 5/14*
U.S. Cl. 428—161 **7 Claims**



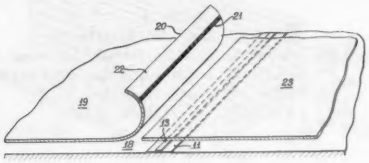
1. An embossed, molded furniture part having contours therein comprising a base layer comprising cellulosic fibers and a binder, said base layer having a density in the range of 10–35 pounds/ft^3, and an integral skin disposed on at least one face of said base layer, said skin having surface contours and having a density in the range of 40–55 pounds/ft^3 and formed by contacting the surface fibers of said base layer with urea, in an amount of 5–35% based on the dry weight of fibers contacted therewith, and molding said contacted surface fibers, under pressure, at a temperature of at least 525° F.

4,268,566

MARKING TAPE AND METHOD

Jack E. Ebert, 103 W. Stratford Pl., Mt. Prospect, Ill. 60056

Filed Jul. 25, 1977, Ser. No. 818,386
Int. Cl.³ B32B *3/00;* **B05D** *5/00*
U.S. Cl. 428—195 **8 Claims**



1. A product for use in marking a unit of material which is to be positioned with its backside against a surface and the material is to be cut to correspond to a feature at a location on said surface which feature is concealed when said unit is in position and, when in position, said surface renders said backside inaccessible for the marking of the unit, said product comprising:

a length of thin, inexpensive, flexible material with two sides;

a pressure sensitive, transferable marking means on one of said sides, said marking means having a characteristic defining a line; and

an adhesive covering at least part of the other of said sides, for affixing the product to the surface, with said defined line at said location;

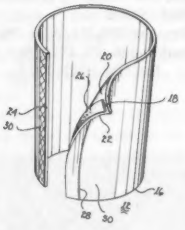
whereby the product may be affixed to said surface with said line at said location and when said unit of material is placed in position with respect to said surface and pressed toward said surface, the marking means then transfers the characteristic defining the line to said backside of said unit.

4,268,567

INSULATOR FOR CANNED DRINKS

Richard C. Harmony, 3426 N. Forgeus Ave., Tucson, Ariz. 85716

Continuation of Ser. No. 946,362, Sep. 27, 1978, Pat. No. 4,181,765. This application Aug. 27, 1979, Ser. No. 70,121
The portion of the term of this patent subsequent to Jan. 1, 1997, has been disclaimed.
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—195 **8 Claims**



1. A removable reuseable thermal insulator for containers, said insulator comprising in combination:

(a) a sheet of foam for circumscribingly engaging the container and thermally insulating the portions of the container proximate said sheet from heat transfer intermediate

the container and the ambient environment, said sheet including opposed ends; and

(b) adhesive means for non-permanently securing said opposed ends in positional relationship to one another upon engagement of said insulator about the container and thereby maintaining said insulator mounted upon the container;

whereby, said insulator is removably engageable about and maintainable upon the container to insulate thermally the container from the ambient environment.

3. The insulator as set forth in claim 2 wherein a surface of said insulator includes printing visible upon mounting of said insulator about the container.

4,268,568

LUBRICATED ELECTRICAL CONTACTS

Richard Sard, Birmingham, Mich., and Kenneth R. Walton, Fanwood, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 14, 1979, Ser. No. 38,570

Int. Cl.[3] **B32B** *15/20, 27/32, 15/04*

U.S. Cl. 428—209 **3 Claims**

1. An electrical contact device comprising

(a) electrical portion which carries current to an electrical contact surface, said electrical portion comprising a metal selected from the group consisting of copper and nickel;

(b) an electrical contact surface layer comprising a metal deposit on said electrical contact surface which consists essentially of gold;

(c) a lubricant that covers at least part of the electrical contact surface layer, said lubricant consisting essentially of a fluorocarbon polymer, and said lubricant having a thickness between 10 and 30 Angstroms.

4,268,569

COATING UNDERLAYERS

Thomas E. Hale, Warren, Mich., assignor to General Electric Company, Detroit, Mich.

Filed Feb. 7, 1979, Ser. No. 10,145

Int. Cl.[3] **B32B** *7/02, 9/04, 31/06, 33/00*

U.S. Cl. 428—215 **44 Claims**

1. A coated cemented carbide product comprising:

a cemented carbide substrate wherein any titanium contained therein is essentially in carbide form;

an interlayer disposed on said substrate, said interlayer being selected from the group consisting of hafnium nitride, titanium nitride, zirconium nitride and a titanium nitride-titanium carbide combination, said titanium nitride-titanium carbide combination consisting of a first layer of titanium nitride and a second layer of titanium carbide overlying said first layer of titanium nitride; and

a fully dense coating of hafnium carbonitride, said coating being firmly and adherently bonded to said interlayer and said substrate, said hafnium carbonitride coating having an X-ray diffraction lattice parameter within the range of about 4.55 to 4.64 angstrom units.

4,268,570

METAL-COATED PLASTIC PRODUCT

Hiroshi Imanaka, and Yoshihiko Kijima, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Jul. 6, 1979, Ser. No. 55,434

Claims priority, application Japan, Jul. 7, 1978, 53-83194

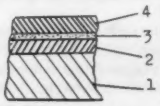
Int. Cl.[3] **B32B** *15/08;* **C08L** *67/06*

U.S. Cl. 428—216 **13 Claims**

1. A metal-coated plastic product, which comprises a molded product of a mixture of:

(a) 95 to 20% by weight of a polyester block copolymer consisting essentially of polyester segments having a high melting point, a component of which can singly form a high polymer having a melting point of 150° C. or higher, and polymer segments having a low melting point and a molecular weight of 400 to 6,000, selected from the group consisting of a polyalkylene ether glycol, a mixture of polyalkylene ether glycols and a copolyether glycol, a component of which has a melting or softening point of 80° C. or lower; and

(b) 5 to 80% by weight of a copolymer comprising 10 to 80% by weight of an acrylic monomer selected from the



group consisting of an alkyl ester of acrylic acid having 1 to 10 carbon atoms in the alkyl moiety, an alkyl ester of methacrylic acid having 1 to 10 carbon atoms in the alkyl moiety, acrylonitrile and metacrylonitrile, 10 to 70% by weight of butadiene and 10 to 60% by weight of styrene; and a layer of a metallic coating thereon.

4,268,571

FOAM-CONTAINING STRUCTURES

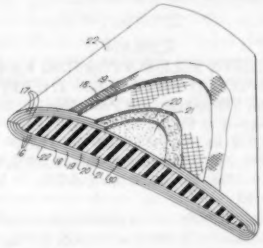
Roy F. J. McCarthy, Cheltenham, England, assignor to Dowty Rotol Limited, Gloucester, England

Filed Aug. 30, 1979, Ser. No. 71,385

Claims priority, application United Kingdom, Sep. 16, 1978, 37125/78

Int. Cl.[3] **B32B** *5/20;* **B64C** *11/26;* **B29D** *27/04*

U.S. Cl. 428—236 **13 Claims**



1. A method of making a foam-containing structure comprising: (a) placing and suitably retaining a respective shaped sheet in each of first and second complementary parts of an open mould which parts present impervious moulding surfaces, each said sheet including at least one layer of fibrous material and, on that face of said one layer remote from the respective mould part, at least one filter layer having substantially uniform porosity throughout, (b) closing said two mould parts together with said sheets still retained therein so that said sheets together define a cavity therebetween, (c) introducing a foamable material into said cavity, (d) causing said foamable material within said cavity to expand to a foamed state, so that some of that material during expansion thereof passes by way of the filter layers over the entire surface area of the filter layers thereby to penetrate said fibrous material to a substantial depth, said filter layers serving to limit the extent to which the expanded material penetrates said fibrous material and serving also to ensure that such penetration takes place to a substantially uniform depth over the entire area of the fibrous material thereby to integrate the expanded material and the fibrous material, and, (e) removing the formation of sheets and expanded material so produced from the mould.

13. A blade, suitable for a propeller, produced by a method as claimed in claim 1.

4,268,572
SULFUR-BASED ROOF SHINGLES
William G. Toland, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Continuation-in-part of Ser. No. 949,704, Oct. 10, 1978, abandoned, which is a continuation of Ser. No. 781,593, Mar. 28, 1977, abandoned. This application Nov. 23, 1979, Ser. No. 97,084
Int. Cl.[3] B32B *11/00;* D06N *7/00*
U.S. Cl. 428—281 10 Claims

1. A non-asphaltic sulfur-based roof shingle having good fire resistance consisting essentially of a fibrous base mat impregnated with a plasticized-sulfur composition comprising from about 30% to about 98% by weight sulfur.

4,268,573
REINFORCING CORDS
Freddy Baillievier, Zwevegem, Belgium, assignor to N.V. Bekaert S.A., Zwevegem, Belgium
Filed Mar. 12, 1979, Ser. No. 19,570
Claims priority, application Luxembourg, Mar. 13, 1978, 79218
Int. Cl.[3] D02G *3/36*
U.S. Cl. 428—295 13 Claims

1. A metal cord having a core filament of filaments for reinforcement of rubber articles comprising a plurality of bundles of grouped filaments wherein the direction of lay of the filaments in the bundles is the same as the direction of lay of the bundles in the cord, each of each filaments having been subjected to plastic torsional deformation, the average length of lay of each bundle in the cord being substantially equal to the average length of lay of each filament in the bundles, and wherein at any cross-section of the cord the filaments comprising the core of the cord differ along the length of the cord and belong to the same or different bundles.

4,268,574
PREFABRICATED SELF-SUPPORTING PANELS AND MANUFACTURE PROCESS THEREOF
Paolo Peccenini, Villagrappa, and Paolo Romini, Ravenna, both of Italy, assignors to Pantec S.r.l., Forli, Italy
Filed Jul. 13, 1979, Ser. No. 57,203
Claims priority, application Italy, Jul. 13, 1978, 25654 A/78
Int. Cl.[3] B32B *5/18, 5/22*
U.S. Cl. 428—315 15 Claims

1. A process of manufacturing prefabricated self-supporting panels which consists of forming a laminate having at least two outer layers and at least one inner layer, said at least one intermediate layer being made of a foamed mixture of (a) an unsaturated polyester resin, (b) hollow microspheres of aluminum phyllosilicate of an average diameter of 150 microns and density of 0.7 kg/cu.dm in a proportion of 5 to 20% by weight based on the unsaturated polyester resin, and (c) a coupling agent which comprises at least one organo-functional silane, in the proportion of 0.1 to 5.0% by weight based on the unsaturated polyester resin and the outer layers comprise a mixture of unsaturated polyester resin, granite grit and an organo-functional silane, the latter in a proportion of 0.1 to about 5.0% with respect to the unsaturated polyester resin, and allowing hardening to occur.

12. A prefabricated self-supporting panel which consists of a laminate having at least two outer layers and at least one inner layer, said at least one inner layer being made of a foamed mixture comprising:

(a) an unsaturated polyester resin,

(b) hollow microspheres of aluminum phyllosilicate having an average diameter of 150 microns and a density of 0.7 kg/dm^3 in the proportion of 5–20% by weight based on the unsaturated polyester resin, and granulated material containing foamed clay having an average diameter of 15 to 20 mm and a specific gravity of 0.35 kg/dm^3, and

(c) an organo-functional silane derivative in the proportion of 0.1–5%.

4,268,575
THERMAL RECORDING ELEMENTS
Fumiaki Shinozaki; Tomizo Namiki; Masao Kitajima; Tomoaki Ikeda, and Yuzo Mizobuchi, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan
Filed Aug. 7, 1979, Ser. No. 64,465
Claims priority, application Japan, Aug. 7, 1978, 53-96446
Int. Cl.[3] G01D *15/32*
U.S. Cl. 428—336 16 Claims

1. In a thermal recording element having formed on a support a recording layer which yields an image on thermal deformation under high intensity irradiation due to a difference in optical density between irradiated areas and non-irradiated areas and a protective layer containing an organic high molecular weight material formed on the recording layer, the improvement wherein a higher fatty acid having more than 10 carbon atoms or the higher fatty acid amide thereof is present in or on the protective layer.

4,268,576
STENCIL SHEET WITH SOLVENTLESS COATING AND METHOD OF PREPARATION
Francis H. Montmarquet, Jr., Little Falls, N.J., assignor to Repeat-O-Type Stencil Manufacturing Co., Inc., Wayne, N.J.
Filed Jan. 18, 1980, Ser. No. 113,311
Int. Cl.[3] B05D *3/06*
U.S. Cl. 428—342 25 Claims

1. A stencil sheet suitable for imprinting by mechanical means, said stencil sheet comprising a porous, thin tissue base through which stencil ink may pass, and

a stencil ink-impervious coating composition, said coating composition consisting essentially of:

a film forming component present in an amount ranging from about 15 to about 60% by weight, said film forming component comprising an ethylenically unsaturated monomer compound selected from the group consisting of acrylic acid, methacrylic acid, the esters thereof, vinyl esters, vinyl ethers, vinyl ketones, styrene, unsaturated dicarboxylic acids, allyl alcohol esters, and mixtures thereof,

a photopolymerization initiator compound sensitive to ultraviolet light, said photopolymerization initiator compound selected from the group consisting of aromatic ketones, tertiary amines, and mixtures thereof, said photopolymerization initiator compound present in an amount of up to about 5% by weight, and

a nonvolatile nonreactive modifier component comprising one or more plasticizers.

15. A coating composition for application to a stencil base, said coating composition consisting essentially of:

a film forming component present in an amount ranging from about 15 to about 60% by weight, said film forming component comprising an ethylenically unsaturated monomer compound selected from the group consisting of acrylic acid, methacrylic acid, the esters thereof, vinyl esters, vinyl ethers, vinyl ketones, styrene, unsaturated dicarboxylic acids, allyl alcohol esters, and mixtures thereof,

a photopolymerization initiator compound sensitive to ultraviolet light, said photopolymerization initiator compound selected from the group consisting of aromatic ketones, tertiary amines, and mixtures thereof, said photopolymerization initiator compound present in an amount of up to about 5% by weight, and

a nonvolatile, nonreactive modifier component comprising one or more plasticizers.

19. A method for preparing a stencil sheet which comprises:

forming a homogeneous mixture of a coating composition, said coating composition consisting essentially of;

a film forming component present in an amount ranging from about 15 to about 60% by weight, said film forming component comprising an ethylenically unsaturated monomer compound selected from the group consisting of

acrylic acid, methacrylic acid, the esters thereof, vinyl esters, vinyl ethers, vinyl ketones, styrene, unsaturated dicarboxylic acids, allyl alcohol esters, and mixtures thereof,

a photopolymerization initiator compound sensitive to ultraviolet light, said photopolymerization initiator compound selected from the group consisting of aliphatic ketones, aromatic ketones, tertiary amines, and mixtures thereof, said photopolymerization initiator compound present in an amount of up to about 5% by weight, and

a nonvolatile, nonreactive modifier component comprising one or more plasticizers;

providing a porous tissue base and applying said coating compositions to form an ink-impervious coating layer upon at least one surface tissue base; and

polymerizing said coating layer by exposure thereof to ultraviolet radiation for a period of time sufficient to completely cure said coating and form a completed stencil sheet.

4,268,577

ELASTOMERIC COATING COMPOSITION FOR GLASS FIBERS AND COATED GLASS FIBERS MADE FROM SAME

Dennis M. Fahey, Lexington, N.C., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 974,580, Dec. 29, 1978. This application Aug. 29, 1979, Ser. No. 70,595

Int. Cl.³ B05D *3/02;* **B32B** *27/00;* **D02G** *3/00*

U.S. Cl. 428—394 **20 Claims**

1. Glass fiber strand coated with the dried residue of an elastomeric coating composition for glass fibers to yield coated glass fiber strands of medium thickness having improved weaveability by having an increased knot tensile strength, wherein the aqueous elastomeric coating composition, comprises:

(a) an elastomeric latex in an amount in the range of about 30 to about 70 weight percent on a dry solids basis of the composition,

(b) an external plasticizer soluble, dispersible or emulsifiable into the latex but not incorporable into the polymer backbone of the elastomer in an amount in the range of about 10 to about 50 weight percent on a dry solids basis of the composition,

(c) an antioxidant for elastomeric latices in an amount in the range of about 0.05 to about 2 weight percent on a dry solids basis of the coating composition,

(d) an elastomeric latex curing agent in an amount in the range of about 0.3 to about 2.5 weight percent on a dry solids basis of the coating composition,

(e) water in an amount sufficient to obtain a percent solids of the coating composition to allow for coating the glass fiber strand.

4,268,578

COATED POLYOLEFIN FILMS HAVING A LOW ADHERENCE TO THE WELDING BARS OF WELDING MACHINES

Fosco Bordini, 2, Via Vico Maniscalchi, and Luigi Mauri, 16, P.zza del Mercato, both of Terni, Italy

Filed Oct. 23, 1978, Ser. No. 953,876

Claims priority, application Italy, Oct. 24, 1977, 28896 A/77

Int. Cl.³ B05D *3/10;* **B32B** *27/06;* **B65D** *29/02*

U.S. Cl. 428—413 **14 Claims**

1. Coated thermoweldable polyolefin film having improved resistance to sticking to the thermowelding bars, comprising a polyolefin film primed with an alkylenimine polymer and coated with a mixture consisting of from 50 to 80% by weight of a vinyl or vinylidene homopolymer or copolymer, from 10 to 40% by weight of an epoxy resin and from 0.5 to 5% by weight of microcrystalline wax.

4. Process for preparing coated thermoweldable polyolefin film having improved resistance to sticking to the thermowelding bars, which comprises applying a coating mixture consisting of from 50% to 805 by weight of a vinyl or vinyl-idene homopolymer or copolymer, from 10% to 40% by weight of an epoxy resin and from 0.5to 5% by weight of a microcrystalline wax, to a polyolefin film to which has been applied an intermediate primer coating of an alkylenimine polymer or of a low molecular weight polyamine.

4,268,579

PRIMER FOR POWDER COATING

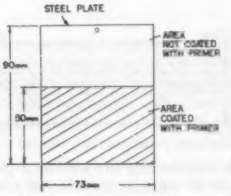
Hajime Suzuki; Ikuo Masuda, and Masaki Kosaka, all of Himeji, Japan, assignors to Daicel Ltd., Osaka, Japan

Continuation of Ser. No. 665,374, Mar. 10, 1976, abandoned. This application Dec. 20, 1978, Ser. No. 971,242

Claims priority, application Japan, Mar. 19, 1975, 50/33229; Sep. 26, 1975, 50/116099

Int. Cl.³ B05D *1/06*

U.S. Cl. 428—413 **14 Claims**



1. A process comprises applying to a metal substrate a coating of a primer composition consisting essentially of a film-forming diene polymer dissolved in an inert organic solvent to form a solution, said solution having dispersed therein from 30 to 110 parts by weight of magnesium oxide particles, per 100 parts by weight of said diene polymer, and drying said coating to form a prime coating film having a thickness of from 4 to 7 microns on said metal substrate whereby to provide a prime-coated metal substrate, preheating said prime-coated metal substrate to a first temperature and then applying a coating of a powder of a film-forming resin on top of said prime coating film by contacting said prime-coated metal substrate with a fluidized bed of said powder of said film-forming resin, said first temperature being above the melting point of said film-forming resin, and thereby melting said film-forming resin to form a top coating film of said film-forming resin bonded to said prime coating film, and then solidfying said top coating film.

4,268,580

RADIATION CURED COATING FOR LEATHER

John D. Rock, Hunters Hill, and John L. Garnett, Longueville, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Sep. 12, 1979, Ser. No. 75,058

Claims priority, application Australia, Sep. 13, 1978, PD5918

Int. Cl.³ B05D *3/06*

U.S. Cl. 428—423.4 **19 Claims**

1. A radiation curable leather substrate coating composition comprising:

(A) from 40 to 90% by weight thereof of at least one first compound selected from the group consisting of prepolymers and co-prepolymers, said first compound being derived from polymerizable monomers selected from the group consisting of alkyl acrylates, alkyl methacrylates, styrene, styrene derivatives and isoprene, wherein at least 80% by weight of said monomers are selected from the group consisting of alkyl acrylates and alkyl methacrylates; and

(B) from 60 to 10% by weight of said composition consisting of a second compound, which is polymerizable with said

first compound, selected from the group consisting of urethane acrylate; epoxy acrylate; rosin derivatives; monomers of vinyl chloride, vinyl acetate, vinylidene chloride and methyl methacrylate; polymers derived from monomers included in this group; and

wherein said at least one first compound and said at least one second compound form a mutually soluble solution.

4,268,581

FIRE-SCREENING GLAZING PANELS AND METHOD OF MANUFACTURING SAME

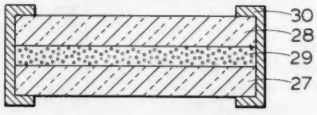
Marcel De Boel, Chatelineau, Belgium, assignor to BFG Glassgroup, Paris, France

Filed Jun. 8, 1979, Ser. No. 46,934

Claims priority, application United Kingdom, Jun. 14, 1978, 26974/78

Int. Cl.[3] **B32B** *17/06*

U.S. Cl. 428—428 **20 Claims**



13. A light-transmitting fire-screening panel comprising at least one layer of intumescent material sandwiched between two structural plies of glazing material, at least the greater part by volume of said material being in granular form.

17. A panel as in claim **13** wherein said intumescent material comprises a hydrated alkali metal salt.

18. A panel as in claim **17** wherein said intumescent material comprises a hydrated alkali metal silicate.

4,268,582

BORIDE COATED CEMENTED CARBIDE

Thomas E. Hale, Warren, and Roy C. Lueth, Marine City, both of Mich., assignors to General Electric Company, Detroit, Mich.

Filed Mar. 2, 1979, Ser. No. 16,902

Int. Cl.[3] **C23C** *11/14;* **B32B** *13/04, 31/24*

U.S. Cl. 428—446 **23 Claims**

1. A coated cemented carbide article comprising: a cemented carbide substrate, the surface region of said substrate having diffused therein for predetermined a depth an element selected from the group consisting of boron, silicon, and aluminum; and a coating disposed on said diffused substrate surface said coating being a boride selected from the group consisting of titanium boride, hafnium boride, zirconium boride, and tantalum boride.

4,268,583

ANTISTATIC FILMS

Brian N. Hendy, Welwyn, England, assignor to Imperial Chemical Industries Limited, London, United Kingdom

Filed Mar. 2, 1979, Ser. No. 17,146

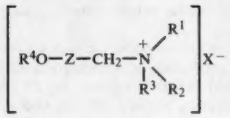
Claims priority, application United Kingdom, Mar. 15, 1978, 10337/78

Int. Cl.[3] **B32B** *27/08*

U.S. Cl. 428—516 **5 Claims**

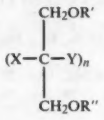
1. A multiple-layer, heat-set, antistatic film having a biaxially oriented substrate layer of a propylene polymer and, on at least one of the two surfaces thereof, a heat-sealable layer of an olefin polymer melting in a temperature range below the melting temperature of the substrate polymer, said heat-sealable layer having on the external surface thereof remote from said substrate layer a composition comprising, based on the total weight of the film,

(a) from 0.005 to 0.25 weight % of a quaternary ammonium compound of the formula



wherein each of R^1, R^2, and R^3, which may be the same or different, is a hydrogen atom or a lower alkyl radical containing from 1 to 6 carbon atoms, or R^1 and R^2 are each methylene groupings within a common five- or six-membered saturated heterocyclic ring, Z is a methylene group when R^4 is a hydrogen atom or an acyl radical containing up to 15 carbon atoms, or Z is a carbonyl group when R^4 is a hydrogen atom, and X is a univalent anion or an equivalent of a multivalent anion,

(b) from 0.005 to 0.5 weight % of an organic polyol containing at least two free hydroxyl groups and of general formula



wherein each of R′ and R″, which may be the same or different, is hydrogen or an acyl radical containing from 2 to 20 carbon atoms, X is —H or —CH_2OR', Y is —OH or —CH_2OR', and n is an integer from 1 to 10, and

(c) from 0.025 to 0.5 weight % of a glyceride of a saturated fatty acid containing up to 22 carbon atoms in its molecule.

4,268,584

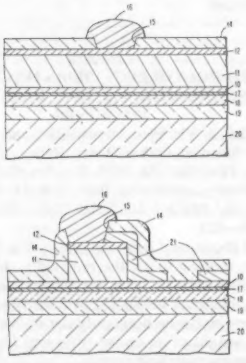
NICKEL-X/GOLD/NICKEL-X CONDUCTORS FOR SOLID STATE DEVICES WHERE X IS PHOSPHORUS, BORON, OR CARBON

Kie Y. Ahn, Chappaqua; Christopher H. Bajorek, Goldens Bridge; Paul S. Ho, Chappaqua; Robert J. Miller, Yorktown Heights, and John V. Powers, Shenorock, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 17, 1979, Ser. No. 103,969

Int. Cl.[3] **B32B** *15/00;* **B05D** *5/12*

U.S. Cl. 428—620 **14 Claims**



1. In a laminated gold conductor including a conductor for

a solid state device supported upon a substrate, the improvement comprising

a first layer of nickel-X material, an intermediate layer of gold deposited upon said first layer, and

a third layer of nickel-X material deposited upon said layer of gold,

where X is an element selected from the group consisting of phosphorus, boron, and carbon.

4,268,585

SOLDERING TO A GOLD MEMBER

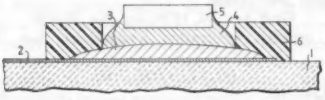
Rolf Daur, Erbach; Herbert Hoffmann, Pfuhl, and Günter Schmid, Senden, all of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Jun. 1, 1978, Ser. No. 911,307

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1977, 2724641

Int. Cl.³ H05K *1/09, 3/12, 3/28, 3/34*

U.S. Cl. 428—622 **20 Claims**



1. A method of applying solder to a gold member which comprises the steps of:

(a) joining an intermediate layer consisting of gold and tin to the surface of the gold member which functions to prevent the diffusion or alloying of the gold member into a subsequently applied soft solder; and

(b) joining a soft solder to at least a portion of said intermediate layer.

4,268,586

CORROSION RESISTANT ZIRCONIUM ALLOY STRUCTURAL COMPONENTS AND PROCESS

Rodney E. Hanneman, Burnt Hills; Andrew W. Urquhart, and David A. Vermilyea, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 26, 1975, Ser. No. 590,418

Int. Cl.³ B32B *15/04*

U.S. Cl. 428—661 **2 Claims**

1. As an article of manufacture, a zirconium-base alloy boiling water reactor structural component having special utility because of its resistance to accelerated pustular corrosion under boiling water reactor conditions, said article having an adherent film coating from about 50 to about 1000 Angstroms thick of a metal selected from the group consisting of gold, silver, platinum, nickel, chromium, iron and niobium and said film comprising a plurality of bands about three to nine microns wide and spaced less than about 10 microns apart.

2. As an article of manufacture, a zirconium-base alloy boiling water reactor structural component having special utility because of its resistance to accelerated pustular corrosion under boiling water reactor conditions, said article having an adherent discontinuous film coating, said film comprising a plurality of bands of gold metal about 150 Angstroms thick.

4,268,587

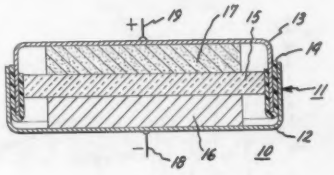
SOLID STATE, AMBIENT TEMPERATURE ELECTROCHEMICAL CELL

Gregory C. Farrington, Elnora, and Walter L. Roth, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 11, 1977, Ser. No. 840,997

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—193 **3 Claims**



1. A sealed solid state, ambient temperature electrochemical cell comprises a casing including an anode compartment and a cathode compartment, the compartments insulated electrically from each other, an anode positioned within and in electrical contact with the anode compartment, the anode selected from the class consisting of lithium, lithium as an amalgam, alloys of lithium with aluminum or silicon, sodium, sodium as an amalgam or alloys of sodium with aluminum or silicon, a cathode positioned within and in electrical contact with the cathode compartment, the cathode comprising pressed sulfur powder and carbon powder containing therein a nominal amount of a non-aqueous solvent with ionic conductivity enhancing materials, and a solid ion-conducting electrolyte positioned between the anode and the cathode and in contact with both the anode and the cathode, the solid electrolyte selected from the class consisting of sodium beta-alumina, sodium beta"-alumina, or lithium-sodium aluminate having an approximate composition of $LiNaO.9Al_2O_3$ of which 1.3 to 85.0 percent of the total alkali ion content is lithium.

4,268,588

SOLID POSITIVE ACTIVE MATERIAL FOR HIGH SPECIFIC ENERGY ELECTRIC CELLS

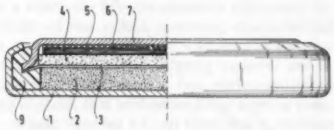
Andre Lecerf, Pace, and Michel Broussely, Poitiers, both of France, assignors to Gipelec, Levallois Perret, France

Filed Nov. 20, 1979, Ser. No. 96,005

Claims priority, application France, Nov. 22, 1978, 78 32924

Int. Cl.³ H01M *6/14*

U.S. Cl. 429—194 **6 Claims**

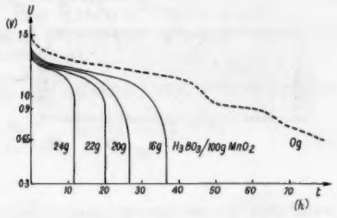


1. An electric cell comprising a casing containing a positive active material, a negative active material, and an electrolyte, said positive active material consisting of a compound formed by two oxides, a first one of which is basic in character and the second one of which is acid in character, said first oxide being cupric oxide CuO, said second oxide being bismuth oxide Bi_2O_3, and said compound being Bi_2CuO_4.

4,268,589
CELL HAVING IMPROVED RECHARGEABILITY

Pentti J. Tamminen, Espoo, Finland, assignor to Imatra Paristo Oy, Finland

Filed Dec. 5, 1978, Ser. No. 966,608
Claims priority, application Finland, Dec. 8, 1977, 773706; United Kingdom, Apr. 3, 1978, 12861/78
Int. Cl.³ H01M 6/04
U.S. Cl. 429—207 **13 Claims**

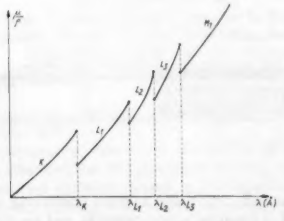


1. A deep-dischargeable secondary cell comprising an aqueous alkaline electrolyte, a positive electrode mass comprising finely divided manganese dioxide and a conductive inert material, a negative electrode mass composed of a material selected from the group consisting of zinc, copper, lead, cadmium, and mixtures and alloys of at least two of these metals, the manganese dioxide of the positive electrode mass being in chemical contact with free negative ions derived from boric acid which is present in the positive electrode mass as finely divided particles.

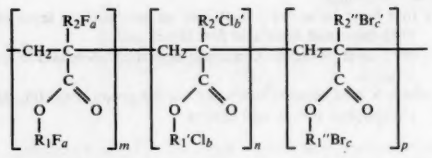
4,268,590
PHOTOMASKING COMPOSITION, PROCESS FOR PREPARING SAME AND MASK OBTAINED

Armand Eranian; Jean C. Dubois; Andre Couttet, and Evelyne Datamanti, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 6, 1980, Ser. No. 127,745
Claims priority, application France, Mar. 9, 1979, 79 06136
Int. Cl.³ G03C 1/68
U.S. Cl. 430—5 **17 Claims**



1. A photomasking composition, degradable under the action of a radiation, formed from α-alkylacrylic type copolymers substituted by at least two types of halogen atoms, having the general formula:



in which:

R_1, R_1', R_1'', R_2, R_2', R_2'' designate alkyl radicals whose principal chain contains 1 to 10 carbon atoms;

these radicals being substituted by fluorine, chlorine, bromine whose indexes a, a', b, b', c, c' are whole, positive or zero numbers;

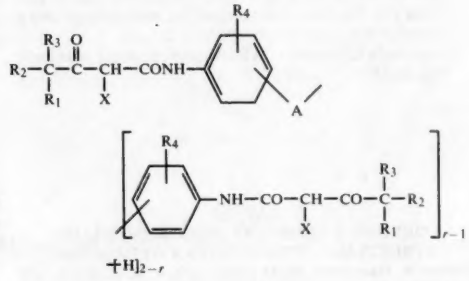
m, n, p designate whole numbers, equal to or greater than zero, a single one of the three numbers m, n, p being able to be equal to zero.

4,268,591
MATERIAL FOR COLOR PHOTOGRAPHY

Paul Tschopp, Düdingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Aug. 28, 1979, Ser. No. 70,474
Claims priority, application Switzerland, Sep. 7, 1978, 9410/78
Int. Cl.³ G03C 7/00
U.S. Cl. 430—17 **25 Claims**

1. A light-sensitive recording material for colour photography, which contains at least one yellow coupler in at least one silver halide emulsion layer, wherein the yellow coupler has the formula



in which R_1 is alkyl having 1 to 18 carbon atoms, R_2 is alkyl having 1 to 18 carbon atoms or aryl, R_3 is substituted or unsubstituted alkyl, alkoxy or alkylmercapto, each having 1 to 18 carbon atoms, cycloalkylmercapto, aryl, aryloxy or arylmercapto, the sum of the carbon atoms in the substituents R_1, R_2 and R_3 being 3 to 30 and at least two of these substituents being able to form a cyclic radical together with the carbon atom to which they are bonded, the R_4s are each halogen, alkyl, alkoxy, halogenoalkyl, alkylsulfonyl or aryloxy, X is a radical detachable during the coupling reaction, A is a 5-membered, heterocyclic, unsaturated ring system which contains 2 or 3 hetero-atoms, at least one of which is a nitrogen atom, and can be fused with a benzene ring and which is substituted by at least one ballast group and r is 1 or 2.

24. A process, for colour photography, for the production of a yellow image by colour development of a recording material according to claim **1**, which has been exposed image-wise.

25. The yellow images produced by the process according to claim **24**.

4,268,592

MATERIAL FOR COLOR PHOTOGRAPHY

Paul Tschopp, Düdingen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

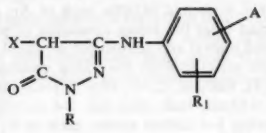
Filed Aug. 28, 1979, Ser. No. 70,475

Claims priority, application Switzerland, Sep. 7, 1978, 9408/78

Int. Cl.³ G03C 7/00

U.S. Cl. 430—17 18 Claims

1. A light-sensitive recording material for colour photography, which contains at least one magenta coupler in at least one silver halide emulsion layer, wherein the magenta coupler has the formula



in which A is a 5-membered, heterocyclic, unsaturated ring system which contains 2 or 3 hetero-atoms, at least one of which is a nitrogen atom, and can be fused with a benzene ring and which is substituted by at least one ballast group, R is a substituted or unsubstituted aryl radical, R_1 is hydrogen, halogen, alkyl, alkoxy, halogenoalkyl, alkylsulfonyl or aryloxy and X is a radical detachable during the coupling reaction.

17. A process, for colour photography, for the production of a magenta image by colour development of a recording material according to claim 1, which has been exposed image-wise.

18. The magenta images produced by the process according to claim 17.

4,268,593

RECORDING MATERIAL FOR COLOR PHOTOGRAPHY

David G. Leppard, Marly, and Michael Rasberger, Riehen, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

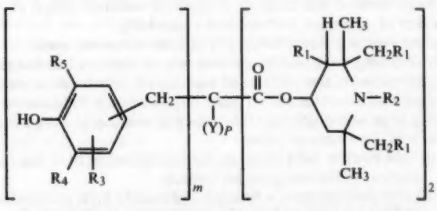
Filed Nov. 5, 1979, Ser. No. 91,275

Claims priority, application Switzerland, Nov. 6, 1978, 11396/78

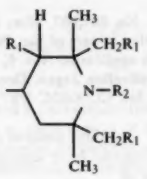
Int. Cl.³ G03C 7/00

U.S. Cl. 430—17 8 Claims

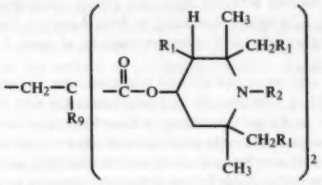
1. A recording material, for colour photography, which contains at least one piperidine compound as the light stabiliser in at least one light-sensitive silver halide emulsion layer, one interlayer and/or one protective layer, wherein the piperidine compound has the formula



in which R_1 is hydrogen or alkyl having 1 to 4 carbon atoms, R_2 is alkyl or hydroxyalkyl, each having 1 to 12 carbon atoms, alkenyl or alkynyl having 3 or 4 carbon atoms, benzyl or R_6CO—, in which R_6 is hydrogen, alkyl having 1 to 12 carbon atoms, alkenyl having 2 or 3 carbon atoms, chloromethyl, cyclohexyl, benzyl or phenyl or phenylethyl, which are unsubstituted or substituted by two alkyl groups, each having 1 to 4 carbon atoms, and one hydroxyl group, R_3 is hydrogen or methyl, R_4 and R_5 are each alkyl having 1 to 5 carbon atoms or cycloalkyl having 5 to 8 carbon atoms and Y is hydrogen, alkyl having 1 to 12 carbon atoms or $—C_nH_{2n}COOR_7$, in which n is 0 or an integer from 1 to 10 and R_7 is hydrogen, alkyl having 1 to 18 carbon atoms, preferably methyl or ethyl, or the radical of the formula



or Y is $—CH_2CH_2CN$ or $—NHCOR_8$, in which R_8 is methyl, ethyl, phenyl or benzyl, or Y is also cyano, benzyl or the radical of the formula



in which R_1 and R_2 are as defined and R_9 is hydrogen or alkyl having 1 to 4 carbon atoms, m is 1 or 2 and p is 1 or 0.

4,268,594

METHOD OF MANUFACTURING A FLUORESCENT SCREEN

Eberhard Gesswein, Erenäcker 20, and Werner Möller, Ravensburger Strasse 77, both of D-7900 Ulm, Fed. Rep. of Germany

Continuation of Ser. No. 918,440, Jun. 23, 1978, abandoned.

This application Apr. 17, 1980, Ser. No. 141,259

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1977, 2731126

Int. Cl.³ G03C 5/00, 7/00

U.S. Cl. 430—24 18 Claims

1. A method of manufacturing a fluorescent screen for color picture cathode ray tubes in which at least two adjacent patterns of the layer of particulate fluorescent material are applied photochemically to the glass front plate of the tube and a pattern of the filter layer which is substantially overlaid with the corresponding pattern of the fluorescent material layer is also applied photochemically at least between one pattern of said fluorescent material layer and said front plate, said filter layer being of a material which exhibits a relatively high transmission efficiency for light in a spectral range including the color emitted by the fluorescent material applied over the filter layer and a relatively low transmission efficiency for light in the remainder of the visible spectrum, characterized in that initially a continuous filter layer is applied as an aqueous suspension made of particulate filtering material and a binding agent sensitized by means of a first photosensitizer and said filter layer is dried; that said entire filter layer is then exposed evenly to actinic light for a short time; that a continuous fluorescent material layer is then applied as an aqueous suspension made of fluorescent material and of a binding agent sensitized by a second photosensitizer which differs from said first photosensitizer and said fluorescent layer is then dried; that said fluorescent layer is then exposed to actinic light by a mask which is arranged in front of said fluorescent layer and has the desired pattern and that the parts of said fluorescent layer which have not been exposed and the parts of the filter layer lying therebelow are removed in a washing process.

4,268,595

ELECTROSTATIC RECORDING MATERIAL AND METHOD FOR THE PRODUCTION THEREOF

Kazuharu Katagiri; Shozo Ishikawa; Shigeto Ohta, and Makoto Kitahara, all of Tokyo, Japan, assignors to Copyer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 887,907, Mar. 17, 1978, abandoned, which is a continuation-in-part of Ser. No. 645,143, Dec. 29, 1975, abandoned. This application Nov. 5, 1979, Ser. No. 91,277
Claims priority, application Japan, Dec. 27, 1974, 49-148575
Int. Cl.³ G03C *1/87*
U.S. Cl. 430—48 **19 Claims**

1. An electrostatic recording material comprising a support having thereon a dielectric layer consisting essentially of a terpolymer consisting of

(a) methacrylic acid,

(b) a monomer selected from the group consisting of (1) acrylic acid esters containing at least 4 carbon atoms and (2) methacrylic acid esters containing at least 5 carbon atoms, and

(c) a monomer selected from the group consisting of (1) acrylic acid esters containing at least 4 carbon atoms and (2) methacrylic acid esters containing at least 5 carbon atoms,

wherein said monomer (b) and said monomer (c) are different and at least one of said monomers (b) and (c) is an acrylic acid ester containing at least 11 carbon atoms or a methacrylic acid ester containing at least 8 carbon atoms,

wherein said acrylic acid esters and methacrylic acid esters are esters of alcohols selected from the group consisting of aliphatic alcohols, aromatic alcohols and alcohols containing an aralkyl group and

wherein the proportion of (a) to the total of (b) and (c) is 10–70 mol % (a) and 30–90 mol % (b) plus (c).

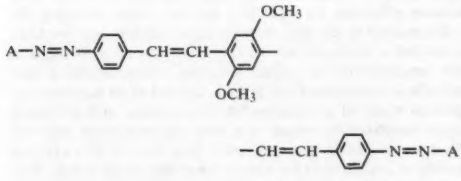
4,268,596

ELECTROPHOTOGRAPHIC ELEMENT HAVING 1,4-BIS(AZOSTYRYL)-2,5 DIMETHOXY BENZENE COMPOUNDS AS PHOTOCONDUCTORS

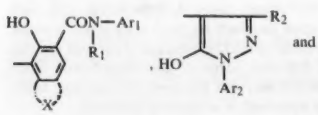
Masaomi Sasaki, Shizuoka; Mitsuru Hashimoto, Numazu, and Tomiko Kawakami, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,279
Claims priority, application Japan, Nov. 27, 1978, 53-145356
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—72 **70 Claims**

1. An electrophotographic element which comprises an electrically conductive support and a photosensitive layer formed thereon, said photosensitive layer consisting essentially of a disazo compound having the formula



wherein A is a member selected from the group consisting of



and

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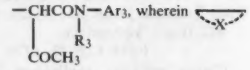


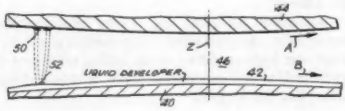
is a fused ring selected from the group consisting of benzene ring, halobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, naphthyl, dibenzofuryl, carbazolyl, substituted phenyl, substituted naphthyl, substituted dibenzofuryl and substituted carbazolyl wherein the substituents are selected from the group consisting of halogen, C_1–C_4 alkoxy, dialkylamino wherein each alkyl has 1–4 carbon atoms, cyano, carboxyl, nitro and SO_3Na; each of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, substituted phenyl and substituted naphthyl wherein the substituents are selected from the group consisting of nitro, SO_3NH_2, SO_3H, halogen, C_1–C_4 alkyl, C_1–C_{14} alkoxy, cyano, dialkylamino wherein each alkyl has 1–4 carbon atoms and acylamino having 1–4 carbon atoms; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, alkyl having 1–4 carbon atoms, phenyl and halophenyl; and R_2 is a member selected from the group consisting of alkyl having 1–4 carbon atoms, carboxyl and esters thereof wherein the ester-forming group has 1–4 carbon atoms; and a resin binder.

4,268,597

METHOD, APPARATUS AND COMPOSITIONS FOR LIQUID DEVELOPMENT OF ELECTROSTATIC IMAGES

Irving L. Klavan, Teaneck; Peter J. Calabrese, Montville; Theron R. Finch, Northvale; Arthur Greenberg, Teaneck, all of N.J., and Robert P. McElroy, Spring Valley, N.Y., assignors to Philip A. Hunt Chemical Corp., Palisades Park, N.J.

Continuation-in-part of Ser. No. 676,463, Apr. 13, 1976, abandoned, Ser. No. 916,041, Jun. 28, 1978, abandoned, and Ser. No. 916,042, Jun. 29, 1978, abandoned. This application Apr. 16, 1979, Ser. No. 29,975
The portion of the term of this patent subsequent to May 13, 1997, has been disclaimed.
Int. Cl.³ B05D *1/04*
U.S. Cl. 430—102 **90 Claims**



1. A method for creating a physical material image at a surface of an object, said method comprising:

(A) providing a liquid developer at a development zone,

(B) disposing said surface of said object close to but out of contact with the surface of said liquid developer at said development zone, p0 (C) providing an electric field extending from said object to said surface of said liquid developer at said development zone,

(i) said electric field being in the configuration of at least a portion of the image to be formed,

(ii) said field being of a strength sufficiently high to transfer at least a portion of said liquid developer to said object,

(iii) said field acting on the liquid developer at said zone,

(a) to change the shape of said surface opposed to said object at said zone so as to form a multiplicity of closely spaced mechanically unsupported tiny discrete amorphous pseudopods of liquid of individual cross-section smaller than the image, which conjointly are in the shape of said portion of the image and which extend from said surface in a direction toward said object and

(b) to contact said object with the liquid at least from the tips of said pseudopods,

(D) said liquid at least from the tips of said pseudopods being deposited on said object, conjointly to form a physical material image in the configuration of said portion.

4,268,598

DEVELOPING POWDER COMPOSITION CONTAINING FLUOROALIPHATIC SULFONAMIDO SURFACE ACTIVE AGENT

Ronald P. Leseman, Newport, and George A. Kurhajec, North Oaks, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 15, 1979, Ser. No. 84,607
Int. Cl.³ G03G *9/00*
U.S. Cl. 430—107 **17 Claims**

1. A developing powder composition that comprises a mixture of from about 99.75 to 95% by weight of toner powder particles and correspondingly from about 0.25 to 5% by weight of a fluoroaliphatic sulfonamido surface active material of the formula

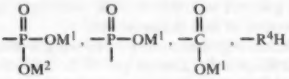
$$[R_f Q]_m A$$

wherein

R_f is a fluoroaliphatic radical;

Q is a divalent sulfonamido-containing group through which R_f and A are joined together;

A is a terminal group selected from the group aryl, alkenylene,



wherein R^4 is an oxalkylene group having from 1 to 10 carbon atoms, an ester group, or sulfate group; M^1 and M^2 are selected from hydrogen, alkyl having from 1 to 6 carbon atoms and salt-forming cations; and

m is equal to the valence of A.

4,268,599

TREATED TONER MAGNETIC CARRIER AND METHOD OF MAKING THE SAME

John J. Russell, Jr., Woodbury, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Division of Ser. No. 1,650, Jan. 8, 1979, Pat. No. 4,225,660, which is a continuation-in-part of Ser. No. 796,363, May 12, 1977, abandoned. This application Jan. 23, 1980, Ser. No. 114,537
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—108 **5 Claims**

1. A particulate magnetic carrier for use in a development powder, the particle being coated with a polymer capable of providing reactive sites of functional organic chemical groupings distributed along the polymer chain and having on the outer surface of said coating a material selected from a group consisting of Rhodamine B, basic Fuschine, stearic acid, stearyl amine and tetrachlorophthalic anhydride covalently reacted with said sites.

4,268,600

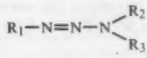
PROCESS FOR PHOTOCHEMICALLY COLORING TEXTILES USING PHOTOSENSITIVE TRIAZENE AND COUPLER THEREFOR

Jean J. Robillard, Ferney-Voltaire, and Claude R. Riou, Gex, both of France, assignors to Issec and Tissages de Soieries Rennis, France

Filed Dec. 1, 1978, Ser. No. 965,437
Claims priority, application France, Dec. 9, 1977, 77 37771
Int. Cl.³ G03C *5/18;* D06P *5/02, 1/02, 5/17*
U.S. Cl. 430—142 **10 Claims**

1. An improved process for colour printing textile articles chosen from the group formed by cloths, garments and textile accessories, in which:

at least one coat, in basic medium, of a photosensitive composition, comprising at least one triazene of general formula:



in which R_1, R_2 and R_3 are chosen from the group consisting of hydrogen, an alkyl radical or an aryl radical, and a coupling agent, capable of yielding an azo dye colour by reaction with a diazonium cation obtained by photochemical decomposition of the triazene by exposure to light, is applied to a suitable surface of the textile article to be printed, then the said coat is exposed to light with a suitable negative image, wherein the improvement consists of washing and rinsing the coated textile article after said exposure to remove unreacted chemical products and then drying the coated textile article.

5. Process according to claim **1**, in which several superimposed coats, each containing colour-generating compound are applied to the surface of the textile articles, characterized in that:

a first photosensitive coating, formed by a composition, based on a triazene and on a coupling agent, capable of yielding a first fundamental azo dye colour on exposure to actinic light, is applied, the coat obtained is then exposed, with a chosen design to actinic light through a first three-colour selection negative corresponding to the colour yielded by this first composition, then it is washed and rinsed;

subsequently, a second photosensitive coating, formed by a composition, based on a triazene and on a coupling agent, capable of yielding a second fundamental azo dye colour on exposure to actinic light, is applied, then this second coat is exposed, with a chosen design, to actinic light through a second three-colour selection negative, corresponding to the colour yielded by this second composition, then it is washed and rinsed;

after that, a third photosensitive coating, formed by a composition, based on a triazene and on a coupling agent, capable of yielding a third fundamental azo dye colour on exposure to actinic light, is applied, then this third coat is exposed, with a chosen design, to actinic light through a third three-colour selection negative, corresponding to the colour yielded by this third composition, then it is washed and rinsed;

and, finally, the textile article obtained is dried.

6. Process according to claim **1**, in which three superimposed coats, each containing colour-generating compounds are applied to the surface of the textile article to be printed, characterized in that

first of all, a first photosensitive coating, consisting of a composition, containing at least one triazene and one coupling agent, capable of yielding a first complementary azo dye colour to the sensitizing colour on exposure to light, a sensitizing agent and at least one compound, polymerisable under the influence of exposure to light, so as to fix the first dye formed, is applied;

then a second photosensitive coating, consisting of another composition, containing at least one triazene and one coupling agent, capable of yielding a second complementary azo dye colour to the sensitizing colour on exposure to light, a sensitizing agent and at least one compound, polymerisable under the influence of exposure to light, so as to fix the second dye formed, is applied to the first coat;

then a third photosensitive coating, consisting of another composition, containing at leat one triazene and one coupling agent, capable of yielding a third complementary azo dye colour to the sensitizing colour on exposure to light, a sensitizing agent and at least one compound,

polymerisable under the influence of exposure to light, so as to fix the third dye formed, is applied to the second coat;

subsequently, these superimposed three coats are exposed to light through a colour negative of the image to be reproduced; subsequently, washing is carried out with a compound, which is a solvent of the unreacted compounds, but a non-solvent of the polymers formed by polymerisation;

and, finally, the textile article obtained is dried in conditions adequate for removing the solvents and fixing the three coats obtained.

4,268,601

PHOTOSENSITIVE IMAGE FORMING MATERIAL AND AN IMAGE FORMING METHOD USING SAME

Tomizo Namiki; Fumiaki Shinozaki, and Tomoaki Ikeda, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 17, 1978, Ser. No. 925,147
Claims priority, application Japan, Jul. 15, 1977, 52-84698
Int. Cl.³ G03C *1/80, 1/52, 1/68;* **G03F** *1/00*
U.S. Cl. 430—159 **21 Claims**

1. A photosensitive image forming material consisting essentially of a transparent support having thereon, in order, a stripping layer of poly(vinyl alcohol), an adhesive layer consisting of an alcohol soluble polyamide which strengthens the adhesive bond between the stripping layer and a photosensitive resin composition layer thus preventing the photosensitive resin composition layer from peeling off prior to development, while, on the other hand, during development the alcohol-soluble polyamide layer is dissolved or swelled by the aqueous developing solution at the areas where the overlying photosensitive resin composition layer is dissolved and removed simultaneously with the corresponding portion of the underlying stripping and adhesive layers to produce a visible image, and at least one of the layer of the poly(vinyl alcohol) or the photosensitive resin composition layer containing a colorant.

10. A method for forming an image comprising (1) imagewise exposing to actinic light a photosensitive image forming material consisting essentially of (A) a transparent support having thereon, in order, (B) a stripping layer consisting of poly(vinyl alcohol), (C) a layer of an alcohol soluble polyamide which strengthens the adhesive bond between the stripping layer and a photosensitive resin composition layer thus preventing the photosensitive resin composition layer from peeling off prior to development, and (D) a photosensitive resin composition layer, while, on the other hand, during development the alcohol-soluble polyamide layer is dissolved or swelled by the aqueous developing solution at the areas where the overlying photosensitive resin composition layer is dissolved and removed by the aqueous developing solution, permitting the aqueous developing solution to reach the stripping layer, and at least one of the layer of the poly(vinyl alcohol) or the photosensitive resin composition layer containing a colorant, and (2) developing said exposed material in a single developing operation with an aqueous developing solution whereby soluble portions of said photosensitive resin composition layer are removed in conjunction with the corresponding portions of said layers of alcohol soluble polyamide and poly(vinyl alcohol) to leave a visible image on said support comprising the layer of the photosensitive resin composition layer and the layers of alcohol soluble polyamide and poly(vinyl alcohol) thereunder remaining.

4,268,602

PHOTOSENSITIVE O-QUINONE DIAZIDE CONTAINING COMPOSITION

Tsuneo Yoshino, Fujisawa, and Gentaro Ohbayashi, Kamakura, both of Japan, assignors to Toray Industries, Ltd., Tokyo, Japan

Filed Dec. 5, 1978, Ser. No. 966,563
Int. Cl.³ G03C *1/54, 1/60, 1/70*
U.S. Cl. 430—192 **3 Claims**

1. A resin composition suitable for use as a photoresist, wherein solubility in an organic developing solvent varies with light exposure, an exposed portion remaining after development, consisting of an admixture comprising

as an ingredient an organic resin obtained by homopolymerization of vinylically unsaturated monomers containing a basic amino group —NRR′ which is no less basic than pyridyl or by copolymerization of said vinylically unsaturated monomers containing a basic amino group –NRR′ no less basic than pyridyl with one or more ethylenically unsaturated monomers;

wherein R is $C_{1\text{-}12}$alkyl, $C_{6\text{-}11}$phenyl, $C_{7\text{-}14}$aralyl; $C_{3\text{-}6}$cycloalkyl or $C_{6\text{-}12}$cycloalkylalkyl having a cycloalkyl group of 3 to 6 carbon atoms and R′ is independently any group defined by R; or wherein NRR′ is pyridyl or a nonaromatic heteromonocycle composed of 3 to 10 nuclear atoms including no more than two heteroatoms selected from N,O and S of which at least one is N;

wherein the nitrogen content of said NRR′ group in said organic polymer is 0.01% to 10% by weight on the basis of the weight of said polymer; and

as an additional ingredient one part by weight of a photosensitive orthoquinone diazide per 5 to 500 parts of said organic polymer.

4,268,603

PHOTORESIST COMPOSITIONS

Takayuki Sato, Yokosuka, Japan, assignor to Tokyo Ohka Kogyo Kabushiki Kaisha, Kawasaki, Japan

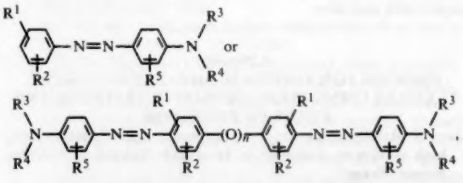
Filed Jul. 27, 1979, Ser. No. 61,306
Claims priority, application Japan, Dec. 7, 1978, 53-151842
Int. Cl.³ G03C *1/60, 1/70, 1/71*
U.S. Cl. 430—196 **15 Claims**

1. A photoresist composition which comprises an admixture of

(a) a cyclized rubber,

(b) a bisazide compound as a photosensitive crosslinking agent in an amount of from 1 to 10 parts by weight per 100 parts by weight of cyclized rubber, said bisazide compound being selected from the group consisting of 4,4′-diazidochalcone, 4,4′-diazidodiphenyl, 4,4′-diazidostilbene, 2,6-bis(4′-azidobenzal)cyclohexanone, 2,6-bis(4′-axidobenzal)-3-methylcyclohexanone and 2,6-bis (4′-axidobenzal)-4-methylcyclohexanone,

(c) 0.5 to 15 parts by weight per 100 parts by weight of the cyclized rubber of a photoextinction agent which is a compound represented by the general formula



in which R^1 and R^2 are each an atom or a group selected from the class consisting of a hydrogen atom, a hydroxy group, alkyl groups and alkoxy groups, R^3 and R^4 are each a group selected from the class consisting of alkyl groups,

hydroxyalkyl groups and aralkyl groups, R^5 is a hydrogen atom or an alkyl group and n is a number of 0 to 1, and

(d) 0.5 to 15 parts by weight per 100 parts by weight of the cyclized rubber of a fluorescent agent which is a compound represented by the general formula $R^6—CH=N—(A)_m—N=CH—R^6$, in which R^6 is an aryl group or a 2-arylethylenyl group, A is a phenylene group and m is a number of 0 or 1.

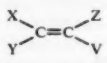
4,268,604

PHOTOGRAPHIC ELEMENT FOR COLOR DIFFUSION TRANSFER PROCESS

Takashi Yoshida, and Shinji Sakaguchi, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Apr. 19, 1979, Ser. No. 31,724
Claims priority, application Japan, Apr. 19, 1978, 53-46247
Int. Cl.³ G03C *1/40, 5/54;* **B32B** *27/08, 27/00*
U.S. Cl. 430—215 **33 Claims**

1. In a photographic element for the color diffusion transfer process including a neutralizing system for reducing the pH of an aqueous alkaline developing solution which comprises a support having coated thereon a neutralizing layer and a timing layer wherein the timing layer is positioned on or under the neutralizing layer in direct or indirect contact therewith such that the aqueous alkaline developing solution reaches the neutralizing layer through the timing layer, the improvement which comprises said timing layer comprising a mixture of at least one polymer latex the minimum film forming temperature of which is 35° C. or less (Group I) and at least one polymer latex the minimum film forming temperature of which is greater than 35° C. (Group II) each polymer latex being produced by emulsion polymerization of (i) at least one monomer selected from the group consisting of monomers of Group (A) and at least one monomer selected from the group consisting of monomers of Group (B), or (ii) at least one monomer selected from the group consisting of monomers of Group (A), at least one monomer selected from the group consisting of monomers of Group (B) and at least one monomer selected from the Group (C), wherein said Group (A) monomers are ethylene type monomers having at least a free carboxylic acid group or a salt thereof; said Group (B) monomers are represented by the following general formula (M):



(M)

wherein X and Y, which may be the same or different, each represents a hydrogen atom, a methyl group, a halogen atom or a $—COOR^1$ group; Z represents a hydrogen atom, a methyl group, a halogen atom or a $—(CH_2)_nCOOR^2$ group; V represents an aryl group, a $—COOR^3$ group or an

group; R^1, R^2 and R^3, which may be the same be the same or different, each represents an aliphatic group or an aryl group; and n represents an integer of 0 to 3;

said Group (C) monomers are monofunctional or polyfunctional unsaturated monomers other than the monomers of Group (A) and Group (B) which are copolymerizable with the monomers of Group (A) and Group (B), the monofunctional monomers being selected from the group consisting of acrylamides, methacrylamides, vinyl ethers, vinyl ketones, allyl compounds, vinyl heterocyclic compounds, and unsaturated nitriles, and the polymer latex layer is water permeable.

11. The photographic element of claim **1**, wherein said photographic element is a laminated integral type film unit which comprises: a photosensitive member comprising an image-receiving element and a photosensitive element comprising one or more silver halide emulsion layer(s) coated in turn on a support, a cover sheet including said neutralizing system, and a processing element capable of being spread between said photosensitive element and said cover sheet.

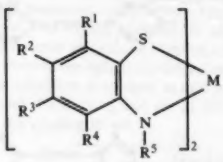
4,268,605

STABILIZATION OF ORGANIC SUBSTRATE MATERIALS INCLUDING PHOTOGRAPHIC DYE IMAGES AGAINST THE ACTION OF LIGHT

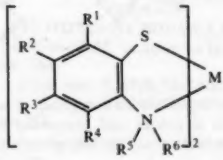
Hiroshi Hara, Asaka; Kotaro Nakamura, and Yoshiaki Suzuki, both of Minami-ashigara all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 29,086, Apr. 11, 1979. This application May 15, 1980, Ser. No. 150,029
Claims priority, application Japan, Apr. 14, 1978, 53-43866
Int. Cl.³ G03C *1/10, 1/40, 1/84*
U.S. Cl. 430—216 **2 Claims**

1. A diffusion transfer color photographic material comprising a photosensitive element and an image receiving element, said image receiving element comprising a support having thereon a mordanting layer containing a complex of the formula (I) or (II)



(I)



(II)

wherein M is a metal selected from the group consisting of Cu, Co, Ni, Pd and Pt; R^1, R^2, R^3 and R^4 each represent a hydrogen atom, a halogen atom, a cyano group, an alkyl group, an aryl group, a cycloalkyl group or a heterocyclic group attached to the carbon atom of the benzene ring directly or through a divalent connecting group; or R^1 and R^2, R^2 and R^3, or R^3 and R^4 can combine to represent the non-metallic atoms necessary to complete a 6-membered ring; and R^5 and R^6, which may be the same or different, each represent a hydrogen atom, an alkyl group, an aryl group, an acyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an alkylsulfonyl group or an arylsulfonyl group.

4,268,606

AZO DYE COMPOUNDS AND PHOTOGRAPHIC MATERIALS

Jan R. Haase; Richard A. Landholm, both of Rochester, N.Y., and James J. Krutak, Sr., Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 439,790, Feb. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 331,729, Feb. 12, 1973, abandoned. This application Feb. 6, 1976, Ser. No. 656,046
Int. Cl.³ G03C *1/10, 1/40*
U.S. Cl. 430—223 **65 Claims**

47. A photographic film unit which is adapted to be processed by passing said unit between a pair of juxtaposed pressure-applying members comprising:

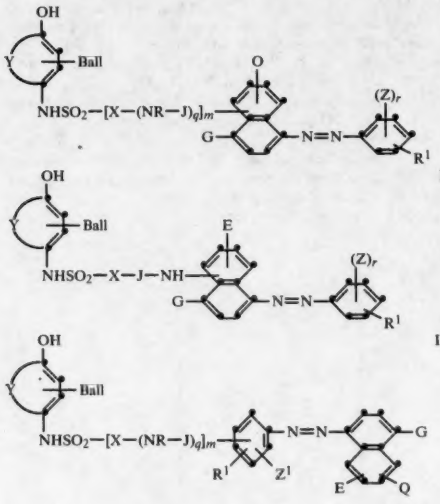
(a) a photosensitive element comprising a support having thereon at least one photosensitive silver halide emulsion

layer and one of said layers having associated therewith a magenta image dye-providing compound;

(b) a dye image-receiving layer which is positioned on the same side of the support as the silver halide emulsion layer; and

(c) means for discharging an alkaline processing composition within said film unit;

said film unit containing a silver halide developing agent and said compound having a formula as follows:



I.

II.

III.

wherein

Ball represents an organic ballasting group of such size and configuration as to render said compound nondiffusible during development in an alkaline processing composition.

Y represents the carbon atoms necessary to complete a benzene or naphthalene nucleus.

m and q each represent an integer having a value of 0 or 1;

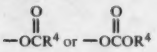
X represents a bivalent linking group of the formula —R^2—L_n—$R^2{}_p$— where each R^2 can be the same or different and each represents an alkylene radical having 1 to about 8 carbon atoms; a phenylene radical; or a phenylene radical substituted with chloro, bromo, cyano, nitro, methoxy, methyl, carboxy or sulfo; L represents a bivalent radical selected from oxy, carbonyl, carboxamido, carbamoyl, sulfonamido, sulfamoyl, sulfinyl or sulfonyl; n is an integer having a value of 0 or 1; p is 1 when n equals 1 and p is 1 or 0 when n equals 0 or when q is 0, L is sulfonyl and n is 1, then p is 0, provided that when p is 1 the carbon content of the sum of both R^2 radicals does not exceed 14 carbon atoms;

R represents a hydrogen atom, or an alkyl radical having 1 to about 6 carbon atoms;

J represents a bivalent radical selected from sulfonyl or carbonyl;

Q represents a hydroxy radical or a radical having the formula —NHCOR^3 or —NHSO$_2$R^3 wherein R^3 is an alkyl radical having 1 to about 6 carbon atoms, an alkyl radical having 1 to about 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy, or sulfo; benzyl, phenyl or a phenyl radical substituted with carboxy, chloro, methyl, methoxy or sulfamoyl;

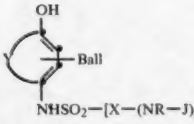
G represents a hydroxy radical, a salt thereof, or a hydrolyzable acyloxy group having the formula:



wherein R^4 is an alkyl radical having 1 to about 18 carbon atoms, phenyl or phenyl substituted with chloro or nitro;

r represents an integer having a value of 1 or 2;

Z represents a cyano radical, a trifluoromethyl radical, a carboxy radical, a carboxylic acid ester having the formula —COOR^4 wherein R^4 is as described previously, a nitro radical in the 2- or 3-position relative to the azo radical, a fluorosulfonyl radical, a sulfo radical, a halogen atom, an alkylsulfonyl radical having 1 to about 8 carbon atoms, an alkylsulfonyl radical having 1 to about 6 carbon atoms substituted with hydroxy, phenyl, cyano, sulfamoyl, carboxy or sulfo; a phenylsulfonyl radical or a phenylsulfonyl radical substituted with hydroxy, sulfamoyl, fluorosulfonyl, carboxy or sulfo; an alkylcarbonyl having 2 to about 5 carbon atoms, a sulfamoyl radical having the formula —SO$_2$NR^{5}R^6 wherein R^5 and R^6 are the same or different and each may represent hydrogen, an alkyl radical having 1 to about 6 carbon atoms, an alkyl radical having 1 to about 4 carbon atoms substituted with hydroxy, cyano, sulfamoyl, carboxy or sulfo; a benzyl radical, a phenyl radical, or phenyl radical substituted with hydroxy, sulfamoyl, sulfonyl, carboxy or sulfo; an alkylcarbonyl having 2 to about 7 carbon atoms, phenylcarbonyl, an alkylsulfonyl having 1 to about 6 carbon atoms, phenylsulfonyl, or R^5 and R^6 taken together can represent =CH—N(CH$_3$)$_2$; a carbamoyl radical having the formula —CON(R^5)$_2$ wherein each R^5 can be the same or different and is as described previously; and, in Formulas I or II when r is 1, Z may represent a radical having the formula



wherein Y, Ball, X, J, R, q and m are as described previously;

R^1 represents a hydrogen atom, an alkyl radical having 1 to about 4 carbon atoms, an alkoxy radical having 1 to about 4 carbon atoms, or a halogen atom;

E is in the 5-, 6- or 7- position relative to G and represents a hydrogen atom, a carboxy radical, a carboxylic acid ester having the formula —COOR^4 wherein R^4 is as described previously, a sulfo radical, a sulfamoyl radical having the formula —SO$_2$NR^{5}R^6, a carbamoyl radical having the formula —CON(R^5)$_2$ wherein R^5 and R^6 are as described previously, an alkylsulfonyl radical having 1 to about 8 carbon atoms, an alkylsulfonyl radical having 1 to about 8 carbon atoms substituted with cyano, hydroxy, sulfamoyl, phenyl or sulfo; a phenylsulfonyl radical or a phenylsulfonyl radical substituted with sulfo, carboxy, fluorosulfonyl or methoxy;

Z^1 represents hydrogen or Z;

with the proviso that there be no more than one sulfo radical and no more than one carboxy radical present in said compound.

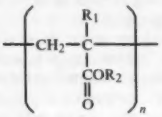
4,268,607

METHOD OF PATTERNING A RESIST LAYER FOR MANUFACTURE OF A SEMICONDUCTOR ELEMENT

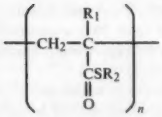
Tsukasa Tada, Yokohama, Japan, assignor to VLSI Technology Research Association, Japan

Filed Dec. 18, 1978, Ser. No. 970,253
Claims priority, application Japan, Dec. 20, 1977, 52-153096
Int. Cl.[3] B05D 3/06
U.S. Cl. 430—270 5 Claims

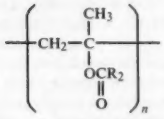
1. A method of patterning a radiation-sensitive positive resist layer for manufacture of a semiconductor element which comprises the steps of applying at least one homopolymer of the radiation-sensitive materials having a structural formula selected from the group consisting of:



(I)



(II)



(III)

where:

R_1 is a methyl group, a halogenated methyl group, a cyano group or a halogen;

R_2 is an alkyl group or an alkoxy alkyl group having 6 or less carbon atoms in which at least one hydrogen is substituted by chlorine or bromine; and

n is an integer of 1 or larger

on a substrate to form a radiation-sensitive resist layer; heating the resist layer to cross-link said radiation-sensitive material and render it insoluble in a solvent; projecting radiation on the cross-linked resist layer to draw a desired pattern; and developing said resist layer to eliminate those portions of the resist layer which were bombarded with radiation.

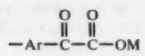
4,268,608

DEVICE FOR USE IN PHOTOCHEMICAL AND PHOTOMECHANICAL PROCESSES

Thaddeus M. Muzyczko, Downers Grove, and Thomas H. Jones, Naperville, both of Ill., assignors to The Richardson Company, Des Plaines, Ill.

Continuation of Ser. No. 854,703, Nov. 25, 1977, Pat. No. 4,156,612, which is a continuation-in-part of Ser. No. 704,494, Jul. 12, 1976, Pat. No. 4,065,314, which is a continuation of Ser. No. 585,215, Jun. 9, 1975, Pat. No. 3,969,119, which is a continuation of Ser. No. 267,475, Jun. 29, 1972, Pat. No. 3,888,671. This application May 25, 1979, Ser. No. 42,434
The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.
Int. Cl.[3] G03C 1/68, 5/00
U.S. Cl. 430—270 7 Claims

1. A device for use in photochemical and photomechanical processes comprising a backing member and a film applied thereto, said film including a polymer having as a recurring structure:



wherein Ar is a bivalent aromatic radical and M is selected from the class consisting of hydrogen, alkali metal, ammonium and substituted ammonium, said recurring structure being present in said polymer as pendant groups from the polymeric chain, and said polymer chain including as a recurring structure $—CH_2—CH—O—$.

4,268,609

PROCESS FOR PREPARING PHOTOSENSITIVE LITHOGRAPHIC PRINTING PLATE PRECURSOR

Keisuke Shiba; Tadao Toyama, and Sho Nakao, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 16, 1980, Ser. No. 169,253
Claims priority, application Japan, Jul. 16, 1979, 54-90053; Sep. 26, 1979, 54-124482
Int. Cl.[3] G03C 1/76
U.S. Cl. 430—271 6 Claims

1. A process for preparing a photosensitive lithographic printing plate precursor comprising a support having a hydrophilic surface and having thereon, in sequence, a non-silver photosensitive layer capable of forming a lipophilic image, and a photosensitive silver halide emulsion layer, the coating of the silver halide emulsion is applied to said non-silver photosensitive layer and dried using hot air at 60° to 150° C. without permitting the coating to set.

4,268,610

PHOTORESIST FORMULATIONS

Leo Roos, San Jose, Calif., assignor to Hercules Incorporated, Wilmington, Del.

Filed Nov. 5, 1979, Ser. No. 91,635
Int. Cl.[3] H05K 3/18
U.S. Cl. 430—281 12 Claims

1. In a photopolymerizable composition for use in photoresists, comprising:

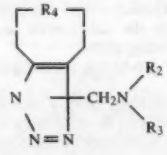
a non-gaseous photopolymerizable compound containing 1 to 4 centers of ethylenic unsaturation and capable of photo-initiated addition polymerization;

a thermoplastic polymer binder;

an addition polymerization initiator activatable by actinic radiation; and

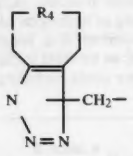
an adhesion promoter;

the improvement of using an adhesion promoter having the formula



wherein R_4 is a benzene or naphthalene radical, each unsubstituted or mono- or di-substituted with alkyl radicals having from 1 to 12 carbon atoms or aralkyl radicals having from 7 to 9 carbon atoms; R_2 is a radical of the formula $R_7O[(alkylene)O]_x$-(alkylene)-, wherein R_7 is hydrogen or an alkyl radical having from 1 to 20 carbon atoms, "alkylene" is a straight or branched chain alkylene radical having 2 or 3 carbon atoms and x is 0, 1, 2, 3 or 4; an alkenyl radical having from 2 to 20 carbon atoms or a cyanoalkyl radical having from 2 to 5 carbon atoms; and R_3 is the same as R_2 or hydrogen; an alkyl radical having from 1 to 20 carbon atoms; an aryl radical having from 6

to 10 carbon atoms; a cycloalkyl radical having from 5 to 12 carbon atoms; an aralkyl radical having from 7 to 9 carbon atoms; a heterocyclic radical or a radical of formula:



wherein R_4 has its previous significance.

4,268,611

CONTACT PHOTOGRAPHIC PROCESS FOR PRODUCING A PLANOGRAPHIC PRINTING PLATE

Yoshio Okishi; Azusa Ohashi, and Masaru Watanabe, all of Yoshida, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 758,750, Jan. 12, 1977, Pat. No. 4,168,979, which is a continuation of Ser. No. 560,011, Mar. 19, 1975, abandoned. This application Dec. 20, 1978, Ser. No. 971,152
Claims priority, application Japan, Mar. 19, 1974, 49-31153
Int. Cl.[3] G03F *7/20, 7/02, 7/08*
U.S. Cl. 430—302 **38 Claims**

1. A process for producing a planographic printing plate which comprises

(1) intimately contacting, using a vacuum contact method, an original image with the outermost layer of a light-sensitive printing plate precursor comprising

(a) a support,

(b) a light-sensitive layer on said support (a), said light-sensitive layer being present in a coating amount of 0.2 to 7 g/m^2 and comprising

(i) a negative-working composition containing a diazo resin, or

(ii) a positive working composition containing an o-diazooxide-based light-sensitive material, a phototungstic acid salt of a diazo resin, a hexacyanferrate salt of a diazo resin, or a diazo resin and polyvinyl hydrogenphthalate, and

(c) a matt layer comprising a resin layer with particles of a matt agent dispersed therein on said light-sensitive layer (b), said matt layer having a surface coarseness Ha ranging from 0.4 to 4 microns and said particles having a particle size of about 2 to 40 microns;

(2) exposing said light-sensitive printing plate precursor to active rays through said original image, and then

(3) removing with a developing solution either the exposed area or the unexposed area of said light-sensitive layer (b) and substantially the entire matt layer (c), thereby to prepare said printing plate.

13. A process for producing a planographic printing plate which comprises

(1) intimately contacting, using a vacuum contact method, an original image with the outermost layer of a light-sensitive printing plate precursor comprising

(a) a support,

(b) a light-sensitive layer on said support (a), said light-sensitive layer being present in a coating amount of 0.2 to 7 g/m^2 and containing a member selected from the group consisting of a diazo resin, an azide compound, and polyvinyl cinnamate as a light-sensitive component of said light-sensitive layer,

(c) a matt layer comprising a resin layer with particles of a matt agent dispersed therein on said light-sensitive layer (b), said matt layer having a surface coarseness Ha ranging from about 0.4 to 4 microns and said particles having a particle size of about 2 to 40 microns, and

(d) a layer of an oleophilic, hydrophobic, water-insoluble and solvent-softenable resin between said light-sensitive layer (b) and said matt layer (c);

(2) exposing said light-sensitive printing plate precursor to active rays through said original image, and

(3) removing with a developing solution either the exposed area or the unexposed area of said light-sensitive layer (b) and substantially the entire matt layer (c), thereby to prepare said printing plate.

27. A process for producing a planographic printing plate which comprises

(1) intimately contacting, using a vacuum contact method, an original image with the outermost layer of a light-sensitive printing plate precursor comprising

(a) a support,

(b) a light-sensitive layer on said support (a), said light-sensitive layer being present in a coating amount of 0.2 to 7 g/m^2 and comprising

(i) a negative-working composition containing a diazo resin, an azide light-sensitive material, a light-sensitive resin having an unsaturated double bond in the molecule which undergoes a dimerization reaction upon irradiation with active rays thereby becoming insoluble, or ethylene-based unsaturated compounds which have at least two unsaturated double bonds and undergo a polymerization reaction upon irradiation of active rays, or

(ii) a positive-working composition containing an o-diazooxide-based light-sensitive material, a phosphotungstic acid salt of a diazo resin, a hexacyanoferrate salt of a diazo resin, a diazo resin and polyvinyl hydrogenphthalate, or a light-sensitive composition containing linear polyamides and monomers containing an addition polymerizable unsaturated bond,

(c) a matt layer comprising a resin layer with particles of a matt agent dispersed therein on said light-sensitive layer (b), said matt layer having a surface coarseness Ha ranging from about 0.4 to 4 microns and said particles having a particle size of about 2 to 40 microns, and

(d) a layer of an oleophilic, hydrophobic, water-insoluble and solvent-softenable resin between the light-sensitive layer (b) and the matt layer (c);

(2) exposing said light-sensitive printing plate precursor to active rays through said original image, and then

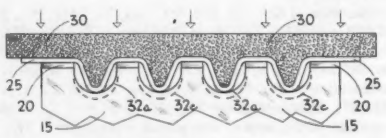
(3) removing with a developing solution either the exposed area or the unexposed area of said light-sensitive layer (b) and substantially the entire matt layer (c), thereby to prepare said printing plate.

4,268,612

METHOD FOR MAKING RELIEF DEEPENINGS IN PRINTING PLATE MATERIALS

Vaclav Misek, 8515 Colonial Dr., Stockton, Calif. 95207

Continuation-in-part of Ser. No. 947,891, Oct. 2, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,501
Int. Cl.[3] G03C *5/00*
U.S. Cl. 430—306 **7 Claims**



1. A method for fabricating a printing plate comprising the steps of:

(a) providing an hydrophilic material as plate material on a plate backing with an adhesive substance within said plate material that is water activated,

(b) exposing portions of said plate material with radiation

whereby portions so exposed becomes less hydrophilic than unexposed portions,

(c) applying water on said plate material thereby activating said adhesive substance on the unexposed more hydrophilic portions,

(d) placing a removal medium on and parallel to said plate material,

(e) moving said removal medium in a direction perpendicular to said plate material whereby such motion enhances an adhesive bond between the exposed areas of said plate material and said plate backing while simultaneously removing more hydrophilic unexposed portions to thereby provide an image.

4,268,613

AGENT FOR PROTECTING THE SURFACE OF LITHOGRAPHIC PRINTING PLATE

Yoshio Okishi, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

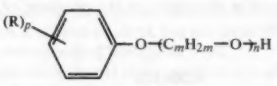
Filed Jun. 25, 1979, Ser. No. 51,467

Claims priority, application Japan, Jun. 23, 1978, 53-76164; Feb. 9, 1979, 54-13943

Int. Cl.[3] **G03F** *7/02*

U.S. Cl. 430—309 **43 Claims**

1. An emulsion type protective agent for the surface of a lithographic printing plate comprising an aqueous phase having dissolved therein a hydrophilic high molecular weight compound and an oil phase containing an organic solvent, an alkylphenyl type nonionic surfactant having an HLB less than 14, wherein said alkylphenyl nonionic surfactant is represented by the formula (I)



(I)

wherein R is an alkyl group, p is 1 or 2, m is an integer of 1 to 4, and n is an integer of 2 or more, an aliphatic carboxylic acid ester type surfactant and an anionic surfactant.

4,268,614

METHOD OF MAKING PRINTED CIRCUIT BOARD

Tamotsu Ueyama, Oyama; Yukihiko Wada, Shimodate; Masaji Homma, Shimodate; Hitoshi Aisawa, Shimodate; Takayoshi Komatsu, Shimodate; Tatsuhisa Shibata, Shimodate, and Hiroharu Kamiyama, Shimodate, all of Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Division of Ser. No. 731,684, Oct. 12, 1976, abandoned, which is a continuation-in-part of Ser. No. 477,424, Jun. 7, 1974, abandoned. This application Dec. 7, 1978, Ser. No. 967,388

Claims priority, application Japan, Jun. 7, 1973, 48-64073; Aug. 22, 1973, 48-93308

Int. Cl.[3] **G03C** *5/00*

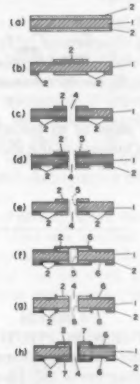
U.S. Cl. 430—315 **3 Claims**

1. A method of making a printed circuit board having on at least one side thereof an electric circuit comprising pad portions, through-hole portions and conductors, which comprises the following steps (A), (B), (C), (D) and (E):

(A) providing an insulating laminate having copper-clad conductor portions and pad portions on at least one surface thereof;

(B) subsequent to step (A) and prior to step (E), forming through-holes in said insulating laminate having inner walls corresponding to the through-hole portions of said electric circuit;

(C) applying a photopolymerizable resin composition onto said at least one surface of said laminate, the photopolymerizable resin composition: (1) comprising (A) a photopolymerizable unsaturated compound having at least two terminal ethylene groups, (B) an initiator capable of initiating polymerization of the above unsaturated compound upon irradiation with actinic rays, (C) a compound having at least two epoxy groups and (D) a compound selected from the group consisting of dicyandiamide, p,p'-diaminodiphenyl compounds, polycarboxylic acids having at least two carboxyl groups, polycarboxylic anhydrides and mixtures of the polycarboxylic acids and the polycarboxylic anhydrides and (2) being adapted to be, upon irradiation with actinic rays, insoluble in an organic solvent but capable of being laminated on and firmly attached to a metal or resin plate by heating while pressing at a temperature of 100° C. or more and adapted to be completely curable by heating, following irradiation with actinic rays, at a temperature of 40° to 180° C., whereby a coat of the resin composition is formed on said at least one surface of said laminate;



(D) irradiating the coat of the photopolymerizable resin composition on the laminate with actinic rays through a pattern mask to expose said coat to the actinic rays except at those portions corresponding to the pad portions and through-hole portions of said electric circuit whereby at least 10% by weight of said photopolymerizable resin composition of the exposed portions gels; trating the irradiated laminate with an organic solvent to dissolve away the photopolymerizable resin composition from the unexposed portions corresponding to the position of the pad portions and through-hole portions to effect development of a predetermined image; and

(E) applying an electroless copper plating only onto the pad portions and through-hole portions, said pad portions and through-hole portions having a sensitivity to electroless plating.

4,268,615

METHOD FOR PRODUCING RELIEF

Yoshimichi Yonezawa, Nagano, Japan, assignor to Matsumoto Yushi-Seiyaku Co., Ltd., Osaka, Japan

Filed May 25, 1979, Ser. No. 42,511

Int. Cl.[3] **G03C** *5/00, 5/24*

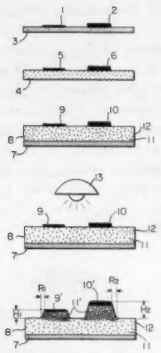
U.S. Cl. 430—320 **4 Claims**

1. A method for producing a relief having a height of at least about 0.5–0.6 mm for use as a braille article for the blind which comprises

applying a pattern layer to the surface of a sheet material made of a mixture of a binder and fine spherical thermoplastic capsules containing a volatile substance in a shell, said pattern layer being a material having a stronger ability to absorb light than the said sheet material, and

uniformly irradiating with strong light the entire surface of the sheet to selectively heat that portion of the surface of

the sheet which is adjacent the undersurfaces of the pattern layer, whereby the pattern layer is raised from the



surface of the sheet in an amount corresponding to the increase of the volume of the sheet portion.

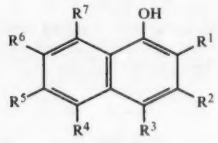
4,268,616

PROCESS FOR FORMING PHOTOGRAPHIC IMAGES

Junkichi Ogawa, and Tsutomu Hamanka, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 17,671, Mar. 5, 1979, abandoned. This application Jan. 18, 1980, Ser. No. 113,160
Claims priority, application Japan, Mar. 6, 1978, 53/25159
Int. Cl.[3] G03C *1/40*
U.S. Cl. 430—364 **21 Claims**

1. A process for forming photographic images consisting of a silver image and a dye image, which comprises development processing an imagewise exposed silver halide photographic light-sensitive material in the co-presence of (A) a naphthalene compound represented by formula (I):



(I)

wherein R^1, R^2 and R^3 each represents a hydrogen atom or a hydrophobic group containing at least 8 carbon atoms, and R^4, R^5, R^6 and R^7 each represents a hydrogen atom, a hydroxy group or a hydrophobic group containing at least 8 carbon atoms, with at least one of R^4 through R^7 representing a hydroxy group, and (B) a 3-pyrazolidone compound, said co-presence being established by incorporating said naphthalene compound (A) and said 3-pyrazolidone compound (B) alone or in combination in a silver halide emulsion layer, a hydrophilic colloid layer associated with the silver halide emulsion layer, or a developing solution such that upon development said naphthalene compound (A) and said 3-pyrazolidone compound (B) react to form a dye image,

thereby said dye image contributing to said photographic images by at least about 20%.

4,268,617

COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Akio Mitsui, and Yoshiaki Suzuki, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Sep. 27, 1979, Ser. No. 79,657
Claims priority, application Japan, Sep. 27, 1978, 53-118986
Int. Cl.[3] G03C *1/40, 7/00, 5/30, 1/06*
U.S. Cl. 430—373 **20 Claims**

1. A silver halide color photographic light-sensitive material comprising a support and at least one silver halide emulsion layer, at least one layer of said photographic material containing at least one compound selected from the group consisting of those compounds represented by the formulae (I), (II), (III) and (IV):

$$[Co(NH_3)_6][R^1COO]_3 \quad (I)$$

$$[Co(NH_3)_6][R^2OOCR^3COO]_3 \quad (II)$$

$$[Co(NH_3)_5(R^4COO)]X_2 \quad (III)$$

$$[Co(NH_3)_5(R^5NH_2)]X_3 \quad (IV)$$

wherein R^1, R^2 and R^4 each represent an alkyl group having at least 3 carbon atoms or a fluorine-substituted alkyl group having at least 1 carbon atom; R^3 is an alkylene group; R^5 is an alkyl group having at least 1 carbon atom; and X is a halogen atom, a nitrate ion, a sulfate ion, or a carboxylate ion, wherein said at least one compound is within an oil-in-water emulsion.

18. A image forming process which comprises image-wise exposing and developing the color photographic material of claim **1** using a color developer in the presence of a color developing agent.

4,268,618

BLEACHING COMPOSITION FOR PHOTOGRAPHIC PROCESSING

Taiji Hashimura, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 7, 1980, Ser. No. 166,205
Claims priority, application Japan, Jul. 5, 1979, 54-85397
Int. Cl.[3] G03C *5/32*
U.S. Cl. 430—393 **28 Claims**

1. A bleaching composition for the photographic processing of silver halide color photosensitive materials containing Components:

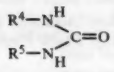
(1) an organic acid-iron (III) complex salt;
(2) an alkali metal or ammonium salt of bromic acid;
(3) a water-soluble halogenide;
(4) at least one compound selected from the group consisting of compounds represented by the formula (I) or (II)

$$X\text{-}(R^1)_n\ COOM \quad (I)$$

(II)

wherein X represents COOM or amino group, with M representing hydrogen, an alkali metal ion or an ammonium ion; R^1 represents a divalent aliphatic group containing from 1 to 4 carbon atoms which may be substituted with hydroxy groups, amino groups, and/or carboxy groups; n is 0 or 1; and R^2 and R^3 may be the same or different from each other, and each represents an amino group, an acylamino group, an alkyl group, an alkenyl group, a phenyl group, or a 5-membered or a 6-membered heterocyclic group, or R^2 and R^3 together form a 5-membered or a 6-membered ring; and

(5) at least one compound selected from the group consisting of compounds represented by the formula (III)



(III)

wherein R^4 and R^5 may be the same or different from each other, and each represents an alkyl group, an alkenyl group, a phenyl group, or a 5-membered or a 6-membered heterocyclic group, or R^4 and R^5 together form a 5-membered or a 6-membered ring.

4,268,619

ELECTROPLATING FROM A THIOSULFATE-CONTAINING MEDIUM WITHOUT SULFIDING

Kenneth M. Dunagan, Oklahoma City, Okla., assignor to RKC Corporation, Oklahoma City, Okla.

Filed Sep. 4, 1979, Ser. No. 72,050
Int. Cl.[3] G03C 5/38; C25C 1/20
U.S. Cl. 430—398 **16 Claims**

1. In a method for electroplating a negatively-charged surface by removing metal ions from a thiosulfate-containing medium in contact with the negatively-charged surface and wherein said negatively-charged surface is not completely surrounded by a fluid barrier during electroplating, the improvement which comprises:

(a) maintaining a voltage of from 0.1 to 2 volts across the medium,

(b) maintaining through the medium a current in amperes which is at least equal to, but not more than about twice, the corresponding voltage in volts,

(c) maintaining the pH of the medium at a pH of from about 4 to about 5 and

(d) agitating the medium without aerating it.

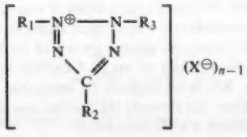
4,268,620

METHOD OF PROCESSING OF LIGHT-SENSITIVE SILVER HALIDE PHOTOGRAPHIC MATERIAL

Tateshi Iytaka; Syunji Matsuo; Toshio Nagatani; Kazuo Takahashi, and Takeshi Habu, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

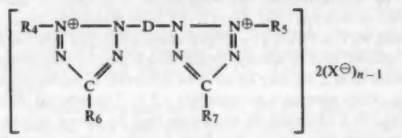
Filed Jan. 16, 1978, Ser. No. 869,658
Claims priority, application Japan, Jan. 31, 1977, 52-9337
Int. Cl.[2] G03C 5/30
U.S. Cl. 430—403 **10 Claims**

1. A method of processing a light-sensitive silver halide black and white photographic material to obtain a high contrast black and white silver image, said material comprising a support containing a silver halide emulsion layer containing silver halide grains having an average grain size of 0.25 to 0.5μ, at least 80% of said silver halide grains being of a grain size which falls within the range of 0.7 times said average grain size to 1.3 times said average grain size, said silver halide comprising (i) silver chlorobromide or silver chloroiodobromide, and (ii) at least 50 mole % of silver chloride, and a sensitizing dye, and also contains a tetrazolium compound selected from the group consisting of the compounds having the following general formulas I, II or III:

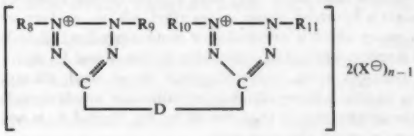


I

-continued



II



III

wherein R_1, R_3, R_4, R_5, R_8, R_9, R_{10} and R_{11} each represent an alkyl, alkenyl, aryl or heterocyclic group; R_2, R_6 and R_7 each represent allyl, phenyl, naphthyl, heterocyclic, alkyl or amino group, carboxyl, an alkoxycarbonyl group, mercapto, nitro or hydrogen; D represents an arylene group; E represents an alkylene, arylene or aralkylene group; X⊖ is an anion; and n is 1 or 2, provided that the compound forms an intramolecular salt when n is 1,

comprising exposing said photographic material to an image and to light, and then

developing said exposed photographic material in a developing solution which does not contain hydroquinone selected from the group consisting of Metol, phenidone and Metol, p-aminophenol and catechol, and phenidone and p-aminophenol, to form said high contrast black and white silver image.

4,268,621

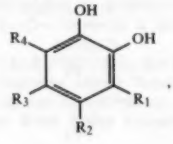
DIRECT POSITIVE PHOTOGRAPHIC MATERIAL

Keiji Ogi; Takashi Sasaki; Kenichiro Okaniwa, and Yasuo Tosaka, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

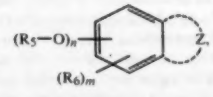
Filed Jul. 27, 1979, Ser. No. 61,400
Claims priority, application Japan, Jul. 29, 1978, 53-92809; Nov. 14, 1978, 53-140135; Nov. 14, 1978, 53-140137
Int. Cl.[3] G03C 5/24, 1/06
U.S. Cl. 430—409 **9 Claims**

1. A direct positive photographic material comprising a layer containing an internal latent image type light-sensitive silver halide emulsion that has not been fogged coated on a support, said material containing a compound represented by the general formula (I) or (II):

General formula (I)



General Formula (II)



wherein R_1 represents a hydrogen atom, a hydroxyl group or an alkyl, alkenyl, alkoxy, acyloxy, aralkyl or aryl group which is substituted or unsubstituted; R_2, R_3 and R_4 each represent a hydrogen atom, a halogen atom, —SO_2R_7, —COR_8, or an

alkyl, alkenyl, alkoxy, aralkyl or aryl group which is substituted or unsubstituted; R_5 represents a hydrogen atom, $-COR_7$ or $-SO_2R_7$ and when n is 2 or 3, R_5 may be same or different; R_6 represents a hydrogen atom, a halogen atom or an alkyl, alkoxy, aryl or alkenyl group which may be substituted, and when m is 2, R_6 may be same or different; Z represents an atomic group necessary to complete a 5 to 7-membered alkylene ring, or a chroman or coumaran ring by fusing together with benzene ring, and Z may have a spyro carbon atom; R_7 represents a hydroxyl group, or an alkyl, alkoxy, aryloxy or amino group which is substituted or unsubstituted; n is 2 or 3; m is a number obtained by subtracting n from 4; and R_8 represents hydrogen atom, hydroxyl group, or an alkyl, alkoxy, aryloxy or amino group which is substituted or unsubstituted, with the proviso that at least one of R_1, R_2, R_3 and R_4 is not hydrogen atoms at the same time.

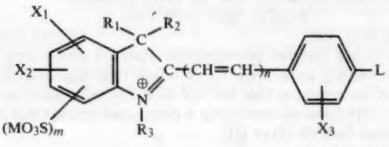
4,268,622

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS HAVING DYED LAYERS

Keiichi Adachi; Eiichi Kato; Nobuaki Inoue, and Tetsurou Kojima, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Dec. 19, 1979, Ser. No. 105,167
Claims priority, application Japan, Dec. 26, 1978, 53-162627
Int. Cl.³ G03C *1/84*
U.S. Cl. 430—513 **21 Claims**

1. A photographic light-sensitive element comprising a support, at least one light-sensitive silver halide emulsion layer carried on said support and at least one hydrophilic colloidal layer carried on said support containing a basic polymer and at least one dye selected from the styryl and butadienyl dyes represented by the formula (I) each containing at least three sulfo groups in the molecule:



(I)

wherein R_1 and R_2 may be the same or different and represent an alkyl group; R_3 represents an unsubstituted or substituted alkyl or alkenyl group; L represent $-O-Y-SO_3M$ or

in which Z_1 and Z_2 can be the same or different and represent a hydrogen atom, an unsubstituted or substituted alkyl group, an alkenyl group, an unsubstituted or substituted aryl group, an acyl group or $-Y-SO_3M$, Y represents an alkylene or alkenylene group, and M represents a hydrogen atom or a cation; X_1, X_2 and X_3 can be the same or different, and each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a hydroxy group, a carboxy group, a substituted amino group or an alkoxycarbonyl group; m is 0 or 1; and n is 1 or 2, there being present in said hydrophilic colloidal layer 1 to 5 equivalents of recurring units forming the polymer per equivalent of acid group in the at least one dye.

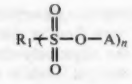
4,268,623

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL HAVING A CARBOXYLIC ACID POLYMER ANTISTATIC LAYER

Hidefumi Sera; Kiyotaka Hori, and Naohiko Sugimoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

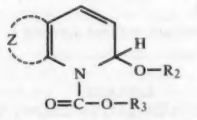
Filed Jan. 11, 1980, Ser. No. 111,498
Claims priority, application Japan, Jan. 11, 1979, 54-1930
Int. Cl.³ G03C *1/78*
U.S. Cl. 430—529 **14 Claims**

1. A photographic material comprising a support, a light-sensitive silver halide emulsion layer, and an antistatic layer, said antistatic layer containing about 10% to 90% wt% of a water-soluble, film-forming polymer having a carboxylic acid group and about 10 to 90 wt% gelatin, and said layer further containing a carboxylic acid activating condensing agent having the ability to activate a carboxyl group such that it reacts with an alcohol or amine in a condensation reaction, said agent being selected from the group consisting of a compound of the formula (I):



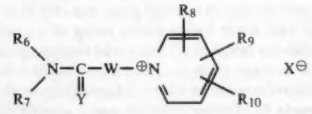
(I)

wherein R_1 may be any n-valent group; A represents a group of atoms that are bound to the oxygen atom in the formula (I) through a nitrogen atom; and n is an integer of from 1 to 4; a compound of the formula (II):



(II)

wherein R_2 is an aliphatic group; R_3 is an aliphatic group or an aryl group and the carboxylic acid residue of the formula $R_3-O-CO-$ in the formula (II) is such that when it reacts with the carboxylic acid group of gelatin to form a mixed acid anhydride, the electron density on the carbonyl carbon is lower than that of the carboxylic acid group in gelatin; Z represents a group of atoms necessary to form a benzene nucleus, and a compound of the formula (III):



(III)

wherein R_6 and R_7 are independently an alkyl, allyl or aralkyl group and R_6 and R_7 may combine to form a 5- or 6-membered ring which may contain 1 to 2 hetero atoms other than the nitrogen atom to which R_6 and R_7 are bound; Y is an oxygen atom or sulfur atom; W is an oxygen atom or a single bond; R_8, R_9 and R_{10} are independently a hydrogen atom, an alkyl group of up to 5 carbon atoms, an alkoxy group of up to 4 carbon atoms, an acrylamido group of up to 4 carbon atoms, and a carbamoyl group; $X^{\ominus}$ is an organic or inorganic acid anion, and $X^{\ominus}$ is absent from the formula (III) when any of R_6, R_7, Y, R_8, R_9 or R_{10} includes a sulfonate anion.

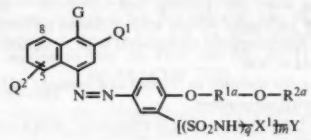
4,268,621

PHOTOGRAPHIC LIGHT-SENSITIVE SHEET FOR THE COLOR DIFFUSION TRANSFER PROCESS

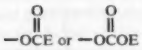
Shinsaku Fujita; Tooru Harada, and Yoshinobu Yoshida, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Nov. 1, 1978, Ser. No. 956,698
Claims priority, application Japan, Nov. 1, 1977, 52-131278
Int. Cl.[3] G03C *1/40, 1/10*
U.S. Cl. 430—562 15 Claims

1. A photographic light-sensitive sheet for the color diffusion transfer process which comprises a support having thereon at least one light-sensitive silver halide emulsion layer with at least one of said silver halide emulsion layers having associated therewith a dye image providing material represented by the following general formula:



wherein Q^1 represents a hydrogen atom, a halogen atom, a sulfamoyl group represented by the formula $—SO_2NR^3R_4$ wherein R^3 represents a hydrogen atom or an alkyl group, R^4 represents a hydrogen atom, an alkyl group, an aralkyl group or an aryl group, and R^3 and R^4 may combine directly or through an oxygen atom to form a ring, a group represented by the formula $—SO_2R^5$ wherein R^5 represents an alkyl group, or a benzyl group, a carboxy group, a group represented by the formula $—COOR^6$ wherein R^6 represents an alkyl group, a phenyl group or a group represented by the formula $—CONR^3R^4$ wherein R^3 and R^4 each has the same meaning as defined above; Q^2, which is positioned at the 5- or the 8-position to the hydroxy group, represents a hydroxy group, a group represented by the formula $—NHCOR^{4a}$ or a group represented by the formula $—NHSO_2R^{4a}$ wherein R^{4a} has the same meaning as R^4 defined above except for the absence of a hydrogen atom, R^{1a} represents an alkylene group having 2 or more carbon atoms, R^{2a} represents an alkyl group; Y represents a moiety which releases or provides, as a result of development processing under alkaline conditions, an azo dye having a different diffusibility from that of said dye image-providing material and represents an N-substituted sulfamoyl group; m is 0 or 1; q is 0 or 1; X^1 represents a divalent bonding group represented by the formula $—A_1—(L)_n-(A_2)_p—$ wherein A_1 and A_2 are the same or different and each represents an alkylene group or an arylene group; L represents a divalent group selected from an oxy group, a carbonyl group, a carboxyamido group, a carbamoyl group, a sulfonamido group, a sulfamoyl group, a sulfinyl group and a sulfonyl group, and n and p each represents 0 to 1; and G represents a hydroxyl group, a salt thereof, or a hydrolyzable acyloxy group represented by the formula



wherein E represents an alkyl group or an aryl group.

4,268,625

PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT FOR THE COLOR DIFFUSION TRANSFER PROCESS

Shinsaku Fujita; Hidetoshi Hayashi; Shigetoshi Ono; Yoshinobu Yoshida, and Tooru Harada, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 911,571, Jun. 1, 1978, abandoned. This application Dec. 4, 1979, Ser. No. 100,076
Claims priority, application Japan, Jun. 1, 1977, 52-54533
Int. Cl.[3] G03C *1/40, 1/10*
U.S. Cl. 430—562 15 Claims

1. A photographic light-sensitive element for the color diffusion transfer process which comprises a support having thereon at least one light-sensitive silver halide emulsion layer with at least one of said silver halide emulsion layers having associated therewith a compound represented by the following general formula:

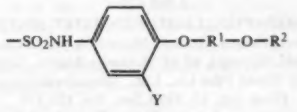
D-Redox Moiety

wherein D represents an azo dye moiety represented by the following formula (IIa) or (IIb):

$$A—N=N—B— \quad \text{(IIa)}$$

$$—A—N=N—B \quad \text{(IIb)}$$

wherein A represents a coupling component residue derived from a phenol or a nucleus-substituted phenol, a 1- or 2-naphthol or a nucleus-substituted 1- or 2-naphthol, a pyrazolone or a nucleus-substituted pyrazolone or an acyclic or alicyclic β-diketone compound; and B represents a phenyl group, a nucleus-substituted phenyl group, a naphthyl group or a nucleus-substituted naphthyl group and Redox Moiety represents a group represented by the following general formula:



wherein R^1 represents an unsubstituted straight chain alkylene group having 2 or more carbon atoms or an unsubstituted branched chain alkylene group having 2 or more carbon atoms with the proviso the branched chain alkylene group is incapable of forming an acetal linkage; R^2 represents an alkyl group; and Y represents a o-hydroxyphenyl sulfamoyl group having a ballast group bonded thereto and an alkyl group at the meta position to the hydroxyl group thereof.

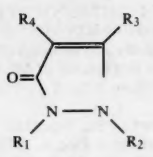
4,268,626

DRY IMAGE FORMING MATERIAL

Minoru Akiyama; Kageyasu Akashi; Tetsuo Shiga; Yoshinobu Ito; Takeo Kimura, and Takeki Matsui, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Aug. 15, 1979, Ser. No. 66,739
Claims priority, application Japan, Aug. 28, 1978, 53-103914
Int. Cl.[3] G03C *1/02*
U.S. Cl. 430—620 7 Claims

1. In a dry image forming composition consisting essentially of (a) a non-photosensitive organic silver salt oxidizing agent, (b) a reducing agent for silver ions, (c) a photosensitive silver halide or a photosensitive silver halide-forming component capable of forming a photosensitive silver halide by the reaction thereof with said organic silver salt oxidizing agent, and (d) a toner, the improvement which comprises employing as said toner (d) at least one member selected from the group consisting of compounds represented by the formula



wherein R_1 is a hydrogen atom, a C_1–C_5 straight chain or branched alkyl group, an unsubstituted or substituted phenyl group or an unsubstituted or substituted C_3–C_8 cycloalkyl group; R_2 is a C_1–C_5 straight chain or branched alkyl group, an unsubstituted or substituted phenyl group or an unsubstituted or substituted C_3–C_8 cycloalkyl group; and R_3 and R_4 are the same or different and each represent a hydrogen atom, a C_1–C_5 straight chain or branched alkyl group, an unsubstituted or substituted phenyl group or an unsubstituted or substituted phenylakyl group having a C_1–C_5 straight chain or branched alkyl moiety.

4,268,627

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hidefumi Sera; Katuzi Kitatani; Masasi Ogawa; Kunio Ishigaki, and Hisashi Shiraishi, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

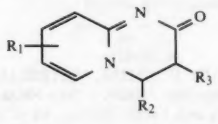
Filed Jun. 13, 1980, Ser. No. 159,279

Claims priority, application Japan, Jun. 15, 1979, 54-76161

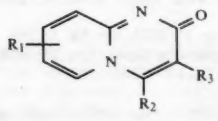
Int. Cl.[3] **G03C** *1/30*

U.S. Cl. 430—623 **9 Claims**

1. A photographic light-sensitive material comprising at least one hydrophilic colloidal layer containing a hardener, and further containing as an acid-captor at least one compound represented by formula (I) of formula (II):



(I)



(II)

wherein R_1 represents hydrogen, a lower alkyl group containing 5 or less carbon atoms, an alkoxy group containing 5 or less carbon atoms, or a halogen atom, and R_2 and R_3 each independently represents hydrogen, an alkyl group containing 10 or less carbon atoms, an aryl group containing from 6 to 12 carbon atoms, or an alkoxycarbonyl group containing 5 or less carbon atoms.

4,268,628

METHOD FOR THE DETERMINATION OF α-AMYLASE

Sigmar Klose, Berg; Hans-Georg Batz, Tutzing; Michael Stoltz, Polling; Alexander Hagen, and Günter Weimann, both of Tutzing, all of Fed. Rep. of Germany, assignors to Boehringer Mannheim GmbH, Mannheim-Waldhof, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 22,011

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812154

Int. Cl.[3] **C12Q** *1/40*

U.S. Cl. 435—22 **19 Claims**

1. Method for the determination of alpha-amylase which method comprises

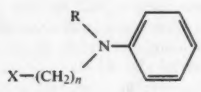
contacting at a pH of from 5 to 9, a sample suspected of containing alpha-amylase with a starch derivative carrying couplable substituents capable of dyestuff-forming coupling, to split said starch derivative by said alpha-amylase, forming a starch-containing phase and low molecular weight soluble fission products containing said couplable substituents;

separating from the resulting said starch-containing phase the low molecular weight soluble fission products,

coupling said couplable substituents with a dyestuff-forming component, and

measuring the dyestuff so formed as a measure of the initial alpha-amylase content;

wherein said starch derivative is substituted with a compound of the formula



(I)

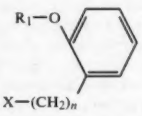
wherein

R is a hydrogen atom or an alkyl radical containing up to 4 carbon atoms or an $-(CH_2)_n-X$ radical,

X is a function capable of forming covalent bond with a hydroxyl group of the starch, and

n is 1, 2, 3 or 4 or

with a compound of the formula



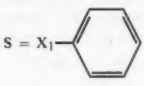
(II)

wherein

R_1 is a hydrogen atom or a protective group which is easily split off, and

X and n have the same meanings as in formula (I) or

wherein the starch derivative is of the formula



(III)

wherein

X_1 -N- or

and S is a starch residue.

4,268,629

PRODUCTION OF ANGIOGENIC FACTOR BY CELL CULTURE

William R. Tolbert, Manchester; Mau-Jung Kuo, Chesterfield, and Joseph Feder, University City, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Mar. 3, 1980, Ser. No. 126,811
Int. Cl.[3] C12P 1/00
U.S. Cl. 435—41 5 Claims

1. Process for the production of human angiogenic factor in vitro comprising growing the human diploid cell line IMR-90 on support surface in nutrient culture medium at about 35°–38° C. for a sufficient time to elaborate angiogenic factor and isolating the resulting angiogenic factor from the cells or cell product.

4,268,630

MICROBIOLOGICAL PRODUCTION OF KETONES FROM C_3–C_6 ALKANES

Ramesh N. Patel; Ching-Tsang Hou, both of Edison, N.J., and Allen I. Laskin, New York, N.Y., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 896,475, Apr. 14, 1978, abandoned, and Ser. No. 896,476, Apr. 14, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,711
Int. Cl.[3] C12P 7/26
U.S. Cl. 435—148 10 Claims

1. A process for the microbiological conversion of a C_3–C_6 n-alkane to the corresponding methyl ketone, comprising oxidizing said alkane by contacting a reaction medium containing a C_3–C_6 n-alkane, under aerobic conditions, in the presence of resting or washed microbial cells derived from a bacterial methylotrophic microorganism or an enzyme preparation derived from said cells, in the absence of a growth medium for said cells and under conditions such that at least a portion of the alkane molecule is oxidized to the corresponding methyl ketone in isolatable amounts by said cells or enzyme preparation, wherein said microorganism has been previously grown under aerobic conditions in a nutrient medium containing methane.

4,268,631

APOGLUCOSE OXIDASE PREPARATION

Paul B. Ellis, High Wycombe, and David L. Morris, Stoke Poges, both of England, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Jun. 4, 1979, Ser. No. 45,191
Int. Cl.[3] C12N 9/04
U.S. Cl. 435—190 21 Claims

15. An apoglucose oxidase preparation characterized by a residual glucose oxidase activity of less than 0.05%.

4,268,632

PROCESS FOR ISOLATION OF RIBULOSE 1,5-DIPHOSPHATE CARBOXYLASE FROM PLANT LEAVES

Samuel G. Wildman, Santa Monica, and Prachuab Kwanyuen, Los Angeles, both of Calif., assignors to Leaf Proteins, Inc., Carson, Calif.

Filed Sep. 24, 1979, Ser. No. 78,505
Int. Cl.[3] C12N 9/88
U.S. Cl. 435—232 27 Claims

1. A process for obtaining ribulose 1,5-diphosphate carboxylase from plant material comprising the leaves of green plants comprising the steps:

(a) converting the leaves to a pulp comprising a mixture of a solid portion and a liquid portion, said liquid portion containing dissolved ribulose 1,5-diphosphate carboxyase;

(b) heating the liquid portion to a temperature below that at which protein in the liquid portion denatures for a time sufficient to induce the ribulose 1,5-diphosphate carboxylase to crystallize when said liquid portion is cooled; and

(c) cooling said liquid portion to a temperature at which said ribulose 1,5-diphosphate carboxylase crystallizes.

13. Ribulose 1,5-diphosphate carboxylase in the form of octagonal crystals.

4,268,633

POLYURETHANES CONTAINING A POLY (OXYORGANOPHOSPHATE/PHOSPHONATE) FLAME RETARDANT

Ralph B. Fearing, Bardonia, N.Y., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 898,241, Apr. 20, 1978, Pat. No. 4,199,534. This application Sep. 10, 1979, Ser. No. 73,836
Int. Cl.[3] C08G 18/14
U.S. Cl. 521—168 4 Claims

1. Polyurethane containing a flame retardant effective amount of the product formed by a two step sequential reaction which comprises:

(1) reacting diorgano organophosphonate represented by the formula:

wherein R, R_1 and R_2 are the same or different organic radicals selected from saturated hydrocarbon radical, alkaryl radical, aralkyl radical, and aryl radical; with reactant consisting of (i) phosphorus oxide reagent, or (ii) phosphorus oxide reagent with an alcohol, to yield a metaphosphate/phosphonate reaction product, wherein the mole ratio of said diorgano organophosphonate to said phosphorus oxide reagent (as P_2O_5) is in the range from about 1:1 to about 2.5:1, and said optionally employed alcohol is not in excess of one mole of alcohol hydroxyl per three moles of phosphorus anhydride unit formed by the reaction of phosphorus oxide reactant with diorgano organophosphonate, and;

(2) reacting the reaction product of step (1) with reactant comprising (I) epoxide, or (II) epoxide with an alcohol to yield poly(oxyorganophosphate/phosphonate) product.

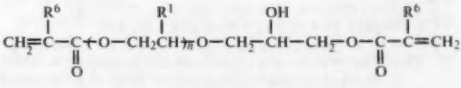
4,268,634

DESENSITIZER FOR NO-CARBON COPY PAPER

Hirokazu Tsukahara; Mitsuru Fuchigami, and Nobuhiro Kagota, all of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Dec. 23, 1977, Ser. No. 863,951
Claims priority, application Japan, Jan. 17, 1977, 52-3826; Feb. 2, 1977, 52-10543
Int. Cl.[2] B41M 5/16; C08L 61/00
U.S. Cl. 525—471 2 Claims

1. A desensitizing composition for no-carbon copy paper, characterized by comprising a pigment, a vehicle and as desensitizer a compound represented by the formula:



where R^1 represents a hydrogen atom or a methyl group and R^6 is a hydrogen atom or a methyl group; and n is an integer of 2 to 23.

4,268,635
AROMATIC POLYMERS

Leslie R. J. Hoy, St. Neots, and John B. Rose, Letchworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Aug. 13, 1976, Ser. No. 714,327

Claims priority, application United Kingdom, Aug. 20, 1975, 34590/75

Int. Cl.³ C08G *65/38*

U.S. Cl. 525—68 **10 Claims**

1. A process for the manufacture of a copolymer whose molecular chains contain phenylene, ketone, and sulphone groups and oxygen atoms comprising heating at a temperature between 250° C. and 300° C., at least one of the reactants selected from

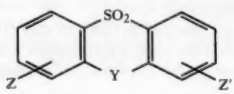
(i) at least one alkali metal halophenate containing a sulphone group ortho or para to the halogen atom,

(ii) a mixture of a dihalobenzenoid compound containing a sulphone group ortho or para to each halogen atom and a substantially equivalent amount of an alkali metal hydroxide or carbonate,

(iii) a mixture of substantially equimolar proportions of at least one dihalobenzenoid compound containing a sulphone group ortho or para to each halogen atom, and at least one alkali metal bisphenate, and

(iv) a polyethersulphone formed from at least one of the reactants (i), (ii) and (iii) above whose molecular chains have at least one phenate end group,

dissolved in a dipolar aprotic liquid, in the presence of a preformed polyetherketone or crystalline etherketone/sulphone copolymer suspended in finely divided particulate form in said dipolar aprotic liquid whereby the product obtained by said heating grafts onto said preformed particulate polymer, the polyetherketone or etherketone/sulphone copolymer and the polyethersulphone or the reactants from which the latter is formed being present in the reaction mixture in the proportions of 20 to 90% by weight of the polyetherketone or etherketone/sulphone copolymer and correspondingly 80 to 10% by weight of the polyethersulphone or such proportions of reactants, where the polyethersulphone is made in situ, to give this proportion of polyethersulphone, the dipolar aprotic liquid being a sulphone of the formula



in which Y is a direct link, an oxygen atom or two hydrogen atoms (one attached to each benzene ring) and Z and Z' are hydrogen atoms or phenyl groups and may be the same or different.

4,268,636
VINYL CHLORIDE RESIN COMPOSITION WITH PROCESSING AID

Yo Iizuka; Haruhiko Yusa, both of Iwaki, Japan; Susumu Midorikawa, deceased, late of Kitaibaragi, Japan, and by Taeko Midorikawa, heir, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,743

Claims priority, application Japan, Dec. 22, 1978, 53-159063

Int. Cl.³ C08L *27/06, 9/00, 51/00*

U.S. Cl. 525—85 **7 Claims**

1. A vinyl chloride resin composition comprising:

(1) 100 parts of a vinyl chloride polymer; and

(2) 0.1 to 30 parts of a polymer processing aid comprising:

(A) 40 to 90 parts of a copolymer comprising 80 to 100% of an alkyl methacrylate, and 0 to 20% of a monomer copolymerizable therewith; and

(B) 60 to 10 parts of a copolymer comprising 20 to 79% of an alkyl methacrylate, 20 to 79% of a monomer selected from the group consisting of a dialkyl itaconate and an alkyl acrylate, 1 to 49% of a diolefin, and 0 to 20% of a monomer copolymerizable therewith, 100 parts of said polymer processing aid having been obtained by polymerizing 60 to 10 parts of the constituent monomers of the copolymer (B) in the presence of 40 to 90 parts of the copolymer (A), all quantities expressed in parts and percentages being by weight.

4,268,637
ELIMINATION OF BLOOM IN [VUL-CUP] PEROXIDE CROSSLINKED ELASTOMER COMPOUNDS

Winfred E. Weldy, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

Filed Jun. 7, 1979, Ser. No. 46,525

Int. Cl.³ C08L *23/16;* **C08J** *23/04;* **C08K** *5/09, 5/14*

U.S. Cl. 525—105 **8 Claims**

1. A crosslinkable composition comprising an elastomeric component selected from ethylene-propylene terpolymer rubbers and blends of said rubbers with silicone rubbers; an effective amount of a peroxide selected from α,α'-bis(t-butylperoxy) para-diisopropylbenzene, α,α'-bis(t-butylperoxy) metadiisopropylbenzene and mixtures thereof; and phthalic anhydride, the amount of phthalic anhydride employed being about 2.0 moles to about 6.0 moles per mole of peroxide employed.

4,268,638
PROCESS FOR THE PREPARATION OF RUBBER-MODIFIED THERMOPLASTIC RESINS

Shin-ichi Shimokawa, Yokkaichi; Yuji Yamamoto, Suzuka, and Hisao Nagai, Yokkaichi, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Jan. 16, 1980, Ser. No. 112,712

Claims priority, application Japan, Jan. 19, 1979, 54/3981

Int. Cl.³ C08F *255/06*

U.S. Cl. 525—263 **18 Claims**

1. A process for the preparation of a rubber-modified thermoplastic resin, which comprises:

treating an ethylene-proylene-non-conjugated diene copolymer rubber with a peroxide in a hydrocarbon or halogenated hydrocarbon solvent to obtain a rubber solution having a rubber gelation degree of not more than 5% and containing substantially no unreacted peroxide;

adding to said rubber solution without isolating the treated copolymer a vinyl monomer mixture consisting of an aromatic alkenyl compound and a polar vinyl compound; and heating the resulting mixture in the substantial absence of a polymerization initiator to graft-copolymerize the monomer mixture on the rubber.

4,268,639
SELF-CURING COMPOSITION BASED UPON POLYMETHYLMETHACRYLATE AND PROCESS FOR MANUFACTURING SAID SELF-CURING COMPOSITION

Hartmut Seidel, Hochrad 19, and Kurt Polzhofer, Bellmannstr. 8, both of 2000 Hamburg 52, Fed. Rep. of Germany

Filed Sep. 19, 1979, Ser. No. 76,925

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1978, 2842839

Int. Cl.³ C08F *265/04, 265/06*

U.S. Cl. 525—303 **21 Claims**

1. A self-curing composition prepared by mixing a finely powdered solid polymer phase comprising a polymeric alkyl methacrylate with a liquid monomer phase comprising monomeric alkyl methacrylates, the polymer and monomer of the composition mixture is a combination consisting essentially of:

(1) Polymethyl methacrylate, monomeric 2-hydroxyethyl methacrylate or

(2) Polymethyl methacrylate + poly-(2-hydroxyethyl methacrylate), monomeric 2-hydroxyethyl methacrylate or

(3) Polymethyl methacrylate + poly-(2-hydroxyethyl methacrylate), monomeric 2-hydroxyethyl methacrylate + monomeric methyl methacrylate or
(4) Polymethyl methacrylate + poly-(2-hydroxyethyl methacrylate), monomeric methyl methacrylate or
(5) Poly-2-(hydroxyethyl methacrylate), monomeric-2-hydroxyethyl methacrylate or
(6) Poly-(2-hydroxyethyl methacrylate), monomeric methyl methacrylate or
(7) Poly-2-(hydroxyethyl methacrylate), monomeric 2-hydroxyethyl methacrylate + monomeric methyl methacrylate, wherein the weight ratio of polymer phase to monomer phase is in the range of 1.5 to 3.3:1 and wherein the portion of poly-2-(hydroxyethyl methacrylate) in the cured product is at least 2% by weight and at most 99% by weight, and then vigorously stirring said mixture at room temperature until polymerization is essentially finished.

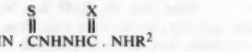
4,268,640

CURABLE COMPOSITION OF HALOGEN-CONTAINING POLYMER

Yasuo Matoba, Toyonaka, Japan, assignor to Osaka Soda Co. Ltd., Osaka, Japan

Filed Nov. 14, 1979, Ser. No. 94,201
Claims priority, application Japan, Nov. 22, 1978, 53-144535; Mar. 8, 1979, 54-27495; May 10, 1979, 54-57687
Int. Cl.[3] C08F *8/34*; C08C *19/22*
U.S. Cl. 525—346 **6 Claims**

1. A curable composition consisting essentially of
(1) 100 parts by weight of a halogen-containing polymer,
(2) 0.1 to 10 parts by weight of a substituted mono- or di-thiobiurea as a crosslinking agent having the formula



wherein R^1 represents a member selected from the group consisting of alkyl groups containing 1 to 18 carbon atoms, cycloalkyl groups containing 5 to 18 carbon atoms, alkenyl groups containing 2 to 18 carbon atoms, aryl groups containing 6 to 18 carbon atoms and aralkyl groups containing 7 to 18 carbon atoms; R^2 represents a hydrogen atom or a member selected from the same group as defined above for R^1; X represents a sulfur or oxygen atom; and when X is an oxygen atom, R^2 represents a hydrogen atom, and
(3) 0.5 to 50 parts by weight of a compound of a metal of Group II or IVa of the periodic table as an acid acceptor.

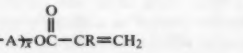
4,268,641

ACRYLIC ACID-ACRYLATE COPOLYMER THICKENING AGENTS

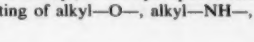
Harvey S. Koenig, Charlotte, N.C., and George M. Bryant, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 32,771, Apr. 24, 1979, abandoned. This application May 29, 1980, Ser. No. 154,521
Int. Cl.[3] C08F *20/06, 20/26, 20/36*
U.S. Cl. 525—367 **7 Claims**

1. A normally solid, base-neutralized copolymer having copolymerized therein about 90 to about 99 mole percent of a carboxyl-containing, ethylenically unsaturated hydrocarbon and about 1 to about 10 mole percent of a nonionic surfactant acrylate having the formula:



wherein R is hydrogen or methyl, R' is a hydrophobe selected from the group consisting of alkyl—O—, alkyl—NH—, and alkyl—CO—, where the alkyl contains 4 to about 30 carbon atoms, A is a divalent radical selected from the group consisting of oxyethylene units or mixed oxyalkylene units having the general formula:



wherein n is an integer having values from 2 to 4 and x is an integer having values of about 5 to about 40, said surfactant acrylate having an HLB value of about 10 to about 19.

4,268,642

BUTADIENE-STYRENE-VINYL BENZYL CHLORIDE TERPOLYMERS

Binnur Gunesin, Uniontown, Ohio, and Adel F. Halasa, Safat, Kuwait, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Mar. 24, 1980, Ser. No. 132,744
Int. Cl.[3] C08F *8/32*
U.S. Cl. 525—382 **7 Claims**

1. A process for the preparation of a terpolymer of improved green strength comprising the steps of polymerizing in an aqueous emulsion at a temperature of 0°–30° C., a monomer mixture consisting essentially of 55–82 percent by weight of butadiene, 12–35 percent by weight of styrene and 8–20 percent by weight of vinyl benzyl chloride and thereafter reacting the resultant terpolymer with a compound having two tertiary amine groups therein.

4,268,643

PROCESS FOR IMPROVING THE STABILITY OF ACETAL POLYMERS

Pierino Radici, Turate; Sergio Custro, Gorla Maggiore, and Paolo Colombo, Saronno, all of Italy, assignors to Societa Italiana Resine S.I.R. S.p.A., Milan, Italy

Filed Oct. 25, 1979, Ser. No. 88,250
Int. Cl.[3] C08G *6/00*
U.S. Cl. 525—400 **15 Claims**

1. A process for esterifying or etherifying the terminal hydroxyl groups of an acetal polymer by reacting said polymer with an end-capping agent selected from the group consisting of anhydrides of carboxylic acids, orthoesters and orthocarbonates, which comprises forming an intimate mixture of acetal polymer in powder form and end-capping agent in liquid form, the amount of said liquid end-capping agent in the mixture being from 0.01 to 0.30 parts by weight per part by weight of acetal polymer and less than that which results in loss of the free-flowing characteristics of the polymer powder, reacting said mixture under stirring at a temperature of at least 50° C. until completion or substantial completion of the end-capping reaction, and recovering the polymer thus end-capped from the reaction product.

4,268,644

VULCANIZABLE RUBBER COMPOSITION

Akio Maeda; Kinro Hashimoto, both of Yokohama; Masaaki Inagami, Kamakura, and Hiroshi Fukushima, Zushi, all of Japan, assignors to Nippon Zeon Co. Ltd., Tokyo, Japan

Filed Jul. 24, 1978, Ser. No. 927,620
Claims priority, application Japan, Jul. 29, 1977, 52-91036; Jul. 29, 1977, 52-91037
Int. Cl.[3] C08L *71/02*
U.S. Cl. 525—403 **15 Claims**

1. A method of preventing deterioration of vulcanized rubber products which come into contact with sour gasoline which comprises forming said product from a vulcanizable rubber composition comprising
(1) 100 parts by weight of a rubber selected from the group consisting of (A) a terpolymer rubber composed of 35 to 80 mole % of epichlorohydrin, 15 to 50 mole % of ethylene oxide and 5 to 15 mole % of an unsaturated epoxide,

and (B) a rubber mixture prepared by mixing an epichlorohydrin-ethylene oxide copolymer rubber with an epichlorohydrin-unsaturated epoxide copolymer rubber so that the mixture will contain 35 to 80 mole % of epichlorohydrin, 15 to 50 mole % of ethylene oxide and 5 to 15 mole % of an unsaturated epoxide;

(2) 0.2 to 10 parts by weight of a non-sulfur vulcanizing agent selected from the group consisting of 2-mercaptoimidazolines, 2-mercaptopyrimidines, trithiocyanuric acid and trithiocyanuric acid derivatives; and

(3) 0 to 10 parts by weight of a vulcanization aid and allowing said product to come into contact with sour gasoline.

4,268,645

POLYESTER RESIN COMPOSITION

John C. Lark, St. Charles, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 24, 1980, Ser. No. 133,149

Int. Cl.[3] **C08G** *63/76;* **C08F** *283/00*

U.S. Cl. 525—437 **24 Claims**

1. A composition comprising water soluble non-linear polyester resin having a molecular weight within the range of from about 5000 to 35000 and (1) a backbone portion comprising a linear prepolyester having an acid number of less than 3 comprising the reaction product of dihydroxy compound and dicarboxylic acid compound in a mole ratio within the range from about 5:4 to about 1.01:1.0, and having a hydroxyl: carboxyl ratio of at least 1, the dihydroxy compound having at least one alkylene group of at least 2 carbon atoms and a molecular weight of no more than 250, and at least 50 percent of the dicarboxylic acid compound is provided by an aromatic dicarboxylic acid compound, and (2) internal and pendant carboxyl acid moieties comprising a polycarboxylic acid compound having at least 3 acyl moieties which provides from 5 to 75 equivalent percent of the acyl moieties in the polyester, wherein the mole ratio of said polycarboxylic compound to said prepolyester is within the range from about 5.4 to 1.01 to 1.0, and wherein the reaction temperature in preparation of said polyester is not greater than 228° C.

4,268,646

ADHESIVE COMPOSITIONS

Reginald T. Agger, Queniborough, and Peter R. Tyers, Leicester, both of England, assignors to USM Corporation, Farmington, Conn.

Filed Nov. 19, 1979, Ser. No. 95,543

Claims priority, application United Kingdom, Dec. 7, 1978, 47490/78

Int. Cl.[3] **C08L** *75/06*

U.S. Cl. 525—440 **13 Claims**

1. A composition comprising a polyurethane formed from reactants comprising:

(a) polyisocyanate,

(b) a hydroxyl terminated polyol,

(c) a difunctional reaction product of methyl methacrylate with a substituted alkene having two chemical groups available for reaction with isocyanate and selected from the group consisting of hydroxyl and amino groups and where the difunctional reaction product has a limiting viscosity number up to about 50 cm^3g^{-1} and is present in an amount to provide from about 0.1 to about 25 percent by weight of the polyurethane and,

(d) a chain extender selected from the group consisting of aliphatic diols, diamenes, amino alcohols and mixtures of these,

and where the molar ratio of reaction product plus chain extender to polyol is in the range between about 0.1:1 to about 1.5:1 and the ratio of reactive isocyanate groups to reactive groups of the polyol, reaction product and chain extender is in the range between about 0.90:1 to about 1.4:1.

4,268,647

ORGANIC MATERIALS HAVING META, PARA-ISOPROPYLIDENE DIPHENOXY UNITS AND METHOD

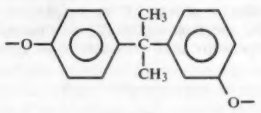
Donald E. Keeley, Menlo Park, Calif., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 966,896, Dec. 6, 1978. This application May 19, 1980, Ser. No. 151,389

Int. Cl.[3] **C08G** *8/20, 63/18, 65/22*

U.S. Cl. 525—474 **10 Claims**

1. Thermoplastic organic polymers having chemically combined units of the formula,



which are selected from the class consisting of polyestercarbonate copolymers, polyesters, polyformals, polysulfones, polyetherimides and organopolysiloxane-polycarbonate block polymers.

4,268,648

RESOL RESINS PREPARED USING BUTANOL AND TRI-ALKALI METAL PHOSPHATE

Dieter Freitag; Wolfgang Beer, and Ferdinand Senge, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,486

Claims priority, application Fed. Rep. of Germany, Jun. 20, 1979, 2924808; Nov. 9, 1979, 2945240

Int. Cl.[3] **C08G** *8/20*

U.S. Cl. 525—485 **8 Claims**

1. A process for preparing a resol resin which comprises reacting formaldehyde and bisphenol A in a molar ratio of from 1.2:1 to 1.8:1 in the presence of n-butanol or iso-butanol and a catalytic amount of a tri-alkali metal phosphate.

4,268,649

BINDER FOR CELLULOSE FIBER REINFORCED BOARD MATERIAL

Karl Jellinek, Iserlohn-Letmathe, and Rolf Müller, Duisburg, both of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 890,894, Mar. 28, 1978. This application May 29, 1979, Ser. No. 43,565

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1977, 2716971

Int. Cl.[2] **C08G** *18/54;* **C08L** *61/10;* **B32B** *27/40*

U.S. Cl. 525—504 **3 Claims**

1. A binder for cellulose fiber reinforced board material comprising a mixture of:

(a) a weakly alkaline phenol formaldehyde condensate resin with a phenolic compound to formaldehyde mol ratio of from 1:1.5 to 1:3.0, and with an alkali content of ≦15% by weight NaOH or KOH, related to the solids content of the resin;

(b) a difunctional isocyanate, poly-functional isocyanate or mixture thereof in a quantity of from 5% to 25% by weight, related to the resin (a); and

(c) a tertiary alkyl amine, aralkyl amine alkylene polyamine or mixture thereof in a quantity of from 0.1% to 5% by weight, related to the resin (a).

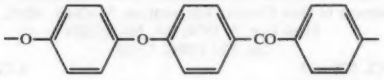
4,268,650

SULPHONATED POLYARYLETHERKETONES

John B. Rose, Letchworth, England, assignor to Imperial Chemical Industries Limited, London, England

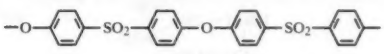
Filed Aug. 21, 1979, Ser. No. 68,467
Claims priority, application United Kingdom, Sep. 5, 1978, 35589/78; Jan. 24, 1979, 7902490/79
Int. Cl.[3] C08G *65/40, 75/23*
U.S. Cl. 525—534 7 Claims

1. A polyaryletherketone polymer which is a hydrophilic sulphonated polymer having repeat units based on the repeat unit which, with no sulphonation, has the formula



wherein up to 90% of said repeat units are sulphonated the sulphonation present being monosulphonation in the subunits

said repeat units being alone or in conjunction with substantially non-sulphonated repeat units of formula



4,268,651

TWO-PHASE VINYL CHLORIDE POLYMERIZATION

Francois Erard, Ecully, France, and Salomon Soussan, Saint-Symphorien D'Ozon, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation-in-part of Ser. No. 941,642, Sep. 12, 1978, abandoned. This application Jun. 29, 1979, Ser. No. 53,356
Claims priority, application France, Sep. 12, 1977, 77 27429
Int. Cl.[3] C08F *14/06*
U.S. Cl. 526—65 19 Claims

1. A process for the preparation of vinyl chloride polymer, comprising mass prepolymerizing vinyl chloride monomer in a first phase under highly turbulent agitation until a degree of conversion thereof of between about 5 and 15% by weight of the vinyl cloride polymer is attained, and thence, in a second distinct phase, mass polymerizing said prepolymerized reaction product through reaction completion under mild agitation, said process being characterized in that (i) there is added to the reaction medium, prior to same attaining a polymer content of about 15% by weight of the reaction medium, an additive in an amount sufficient to provide a polymer product comprising at least 95% by weight of a fraction which will pass through a 250 micron mesh sieve, wherein said additive is selected from the group consisting of (a) a copolymer of vinyl acetate and an ethylenicallly unsaturated carboxylic acid comonomer copolymerizable therewith, and (b) a condensate of ethylene oxide on a polypropylene glycol backbone, and (ii) controlling the rate of reaction such that the period of time during which the polymer content by weight in the reaction medium is between 15 and 25%, is less than 45 minutes.

4,268,652

COLOR STYRENE-ACRYLONITRILE POLYMERS

Raymond W. Kent, Jr., Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 16, 1980, Ser. No. 112,574
Int. Cl.[3] C08F *212/10*
U.S. Cl. 526—217 15 Claims

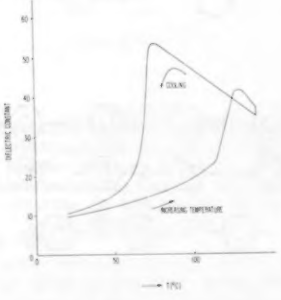
1. In a process for the mass polymerization of a feedstream, said feedstream comprising a monomer composition of from about 20 to about 80 parts by weight of acrylonitrile, from about 80 to about 20 parts by weight of styrene, and from about 0 to about 30 parts by weight of a diluent, said feedstream thereafter being passed into a polymerization zone wherein the feedstream is maintained at a temperature of from about 120° C. to about 170° C. under a pressure of from about 10 to about 300 psi whereby at least a portion of the feedstream is polymerized to form a polymer, said polymer thereafter being subjected to heat and vacuum sufficient to remove at least a major portion of any residual unpolymerized components of the feedstream and diluent, the improvement being the incorporation within the feedstream, as a polymerization initiator, from about 80 to about 700 parts per million parts by weight of the feedstream of an unsymmetrical tertiary-aliphatic-alpha-cyano-azoalkane, the attaining and maintaining of a level of oxygen within the feedstream as it is passed into the polymerization zone, while said feedstream is being polymerized, of not greater than about 20 parts by weight per million parts by weight of the feedstream, and the residence time of the feedstream within the polymerization zone being from about 0.7 to about 1.4 hours.

4,268,653

PROCESS FOR PREPARATION OF A POLYMERIC PIEZO-ELECTRIC MATERIAL AND MATERIAL PREPARED BY SAID PROCESS

Masataka Uchidoi; Kiyonori Iwama; Tsutomu Iwamoto, all of Tokorozawa; Junichi Sako, Suita, and Yoshihide Higashihata, Settsu, all of Japan, assignors to Pioneer Electronic Corporation, Tokyo and Daikin Kogyo Co., Ltd., Osaka, both of, Japan

Filed Mar. 26, 1980, Ser. No. 133,996
Claims priority, application Japan, Mar. 26, 1979, 54-34236; Mar. 26, 1979, 54-34237; Mar. 26, 1979, 54-34238
Int. Cl.[3] B29C *25/00;* H01L *41/00*
U.S. Cl. 526—255 10 Claims



1. A process for preparing a polymeric piezo-electric material by a polarization treatment which comprises

cooling a vinylidene fluoride-trifluoroethylene copolymer from a temperature higher than the phase transition temperature of said copolymer which exists between room temperature and the melting point of said copolymer and either maintaining the temperature within the temperature range where a maximum of dielectric constant occurs, or cooling gradually through said temperature range, while

applying an electric field at least within said temperature range.

5. A polymeric piezo-electric material obtained by a process which comprises polarizing after stretching a vinylidene fluoride-trifluoroethylene copolymer film, in which the piezo-electric constant in the stretching direction and the piezo-electric constant in the orthogonal direction have piezoelectric constants of different polarity from one another.

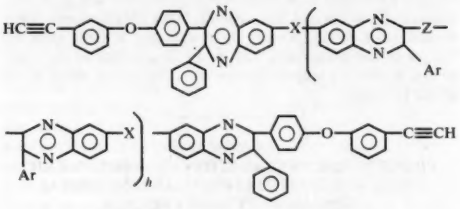
4,268,654

ACETYLENE TERMINATED MATRIX AND ADHESIVE OLIGOMERIC COMPOSITIONS

Fred E. Arnold, Centerville, and Bruce A. Reinhardt, New Carlisle, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

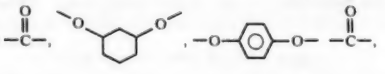
Filed Oct. 26, 1979, Ser. No. 88,504
Int. Cl.³ C08G 73/06
U.S. Cl. 526—259 **8 Claims**

1. A composition consisting essentially of (1) an acetylene-terminated quinoxaline oligomer having the following structure formula:

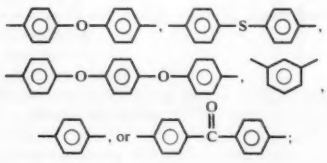


wherein X is a single bond, —O—, —S—,

—CH_2—,



Z is



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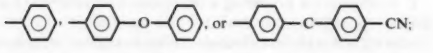
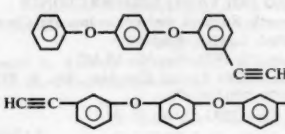


and n is an integer ranging from 1 to 20, inclusive; and (2) about 1 to 40 weight percent, based on the total weight of the composition, of an acetylene-substituted compound selected from the group of compounds having the following structural formulas:



4,268,655

FERROCENE CATALYZED ELASTOMER FORMATION

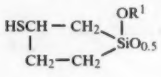
Gary R. Homan, and Chi-Long Lee, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Dec. 3, 1979, Ser. No. 99,283
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 **4 Claims**

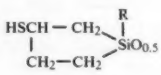
1. A composition of matter comprising a material prepared by mixing

(A) a mercaptoorganopolysiloxane consisting essentially of a combination of units selected from dimethylsiloxane units, hydroxydimethylsiloxane units, trimethylsiloxane units, units of the formula

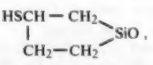
units of the formula



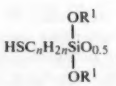
units of the formula



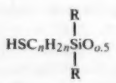
units of the formula



units of the formula



and units of the formula



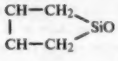
wherein: R is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 carbon atoms inclusive and phenyl radical; R^1 is a monovalent radical selected from the group consisting of alkyl radicals of from 1 to 3 atoms inclusive; and n has a value of from 1 to 4 inclusive, there being in said mercaptoorganopolysiloxane an average of at least two sulfur-containing siloxane units per molecule, but not more than 10

mole percent sulfur-containing units based upon the total number of siloxane units in the mercaptoorganopolysiloxane;

(B) an aliphatically unsaturated polydiorganosiloxane having at least three diorganosiloxane units per molecule wherein each unit of the combination forming the molecule is selected from the group consisting of units of the formula

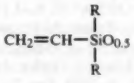
units of the formula

and units of the formula

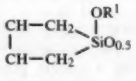


and any endblocking units present being selected from the group consisting of hydroxydimethylsiloxane units, units of the formula

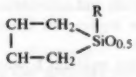
units of the formula



units of the formula



and units of the formula

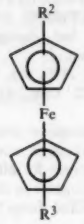


wherein R and R^1 are as defined above, there being at least two aliphatically unsaturated siloxane units per molecule;

(C) an organic peroxide in an amount equal to from about 0 to about 10 parts by weight per 100 parts of the combined weight of (A) and (B);

(D) a filler in an amount equal to from about 0 to about 200 parts by weight per 100 parts of the combined weight of (A) and (B); and

(E) a dicyclopentadienyl iron compound represented by the structural formula



wherein R^2 and R^3 are the same or different and are selected from the group consisting of hydrogen, lower (C_1 to C_3) alkyl, acetyl, carboxyl, vinyl and trimethylsilyl; said dicyclopentadienyl iron compound being present in an amount equal to from about 0.01 to about 5 parts by weight per 100 parts of the combined weight of (A) and (B).

4,268,656

CO-CURING AGENTS FOR EPOXY RESINS

Dilip K. Ray-Chaudhuri, Bridgewater; Wen B. Chiao, Somerville, and Jules E. Schoenberg, Scotch Plains, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jan. 16, 1980, Ser. No. 112,496

Int. Cl.³ C08G *59/56*

U.S. Cl. 528—103 **22 Claims**

1. A unitary, storable, heat-curable epoxy resin system, which comprises a polyepoxide and a curing amount of a combination comprising (1) an epoxy curing agent and (2) a co-curing agent prepared by reacting (a) a polyepoxide with (b) a N-substituted piperazine or a N-substituted homopiperazine, wherein said piperazine is substituted with an alkyl, substituted alkyl, cycloalkyl, aryl or aralkyl group of up to 12 carbon atoms and said homopiperazine is substituted with an alkyl group of up to 3 carbon atoms, said co-curing agent having a ratio of epoxy groups to secondary amino groups of at least 0.8:1.

4,268,657

FRICTION ELEMENT CONTAINING PHENOL-FORMALDEHYDE-ALKYLPHENOL BINDER

Anthony P. Manzara, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Dec. 10, 1979, Ser. No. 101,728

Int. Cl.³ C08G *8/12*; C08L *61/10*

U.S. Cl. 528—155 **5 Claims**

1. In a friction element of the type which is composed of cured organic thermosettable binder having filler dispersed and bonded therein; the improvement comprising employing as said binder a curable mixture comprising a reaction product of:

(a) phenol

(b) formaldehyde; and

(c) monalkyl phenol having from 4 to about 20 carbon atoms in the alkyl group, the mole ratio range of phenol:alkyl phenol:formaldehyde being about 2:1–5:1–7 and the number of moles of phenol and alkylphenol combined exceeding the number of moles of formaldehyde.

4,268,658

PROCESS FOR PREPARING POLYCARBONATES USING IMINOETHERS AS CATALYSTS

Victor Mark, Evansville, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Dec. 28, 1979, Ser. No. 107,893
Int. Cl.[3] C08G *63/62*
U.S. Cl. 528—199 8 Claims

1. An interfacial polymerization process for preparing a high molecular weight polycarbonate which comprises reacting, under interfacial polycarbonate-forming conditions, a dihydric phenol and a carbonate precursor in the presence of a catalytic amount of a catalyst selected from the group consisting of iminoethers and their salts.

4,268,659

MODIFIED POLYESTER IMIDES, HARDENABLE BY ENERGY-RICH RADIATION, PROCESS FOR THEIR PRODUCTION AND THEIR USE FOR THE INSULATION OF ELECTRIC WIRES

Klaus Bederke, Sprockhoevel, and Hermann Kerber, Wuppertal, both of Fed. Rep. of Germany, assignors to Herberts Gesellschaft mit beschrankter Haftung, Wuppertal, Fed. Rep. of Germany

Filed Mar. 25, 1980, Ser. No. 133,898
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2915011
Int. Cl.[3] C08G *63/44, 69/44*
U.S. Cl. 528—288 9 Claims

1. Modified polyester imides, hardenable by energy-rich radiation and containing an acrylic or methacrylic ester group having a hydroxyl group, said ester group being linked to the polyester imide molecule by way of an oxygen atom that is located on the carbon atom adjacent to the carbon atom carrying said hydroxyl group.

4,268,660

ACCELERATED POLYMERIZATION OF 2-PYRROLIDONE

Carl E. Barnes, 482 Trinity Pass, New Canaan, Conn. 06840, and Arthur C. Barnes, 320 Stamford Ave., Stamford, Conn. 06902

Division of Ser. No. 84,813, Oct. 15, 1979, which is a division of Ser. No. 39,773, May 17, 1979, Pat. No. 4,217,442, which is a continuation-in-part of Ser. No. 899,066, Apr. 24, 1978, abandoned. This application Mar. 10, 1980, Ser. No. 129,401
Int. Cl.[3] C08G *69/24*
U.S. Cl. 528—315 1 Claim

1. A method of accelerating the polymerization of 2-pyrrolidone comprising adding a quaternary ammonium compound to 2-pyrrolidone, distilling over under vacuum from 5 to 50 percent of the 2-pyrrolidone and adding the anhydrous residue therefrom as an accelerator to an anhydrous polymerization mixture comprising 2-pyrrolidone, an alkali metal salt of 2-pyrrolidone and a polymerization initiator, and heating the mixture to a temperature of from about 25° to 60° C. whereby a melt extrudable polypyrrolidone is formed.

4,268,661

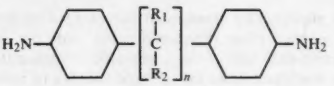
METHOD FOR THE MANUFACTURE OF GLASS CLEAR TRANSPARENT POLYAMIDE

Eduard Schmid, Bonaduz, and Wolfgang Griehl, Chur, both of Switzerland, assignors to Inventa AG fur Forschung und Patentverwertung, Zurich, Zurich, Switzerland

Continuation of Ser. No. 970,643, Dec. 18, 1978, which is a continuation of Ser. No. 745,897, Nov. 29, 1976, abandoned, which is a continuation of Ser. No. 731,810, Oct. 12, 1976, abandoned. This application Feb. 19, 1980, Ser. No. 122,770
Int. Cl.[3] C08G *69/26*
U.S. Cl. 528—338 16 Claims

1. A copolyamide having a glass transition temperature (Tg) of 140°–170° C. consisting essentially of the polymeric condensation product of

(a) a diamine of the formula



wherein R_1 and R_2 are independently selected from hydrogen and methyl, n is an integer from 0 to 6, and wherein each cyclohexane ring may be partially or wholly substituted with methyl groups;

(b) a substantially stoichiometric amount, based on the amount of component (a), of a dicarboxylic acid or acid mixture, consisting of from 50 to 100% of isophthalic acid, from 0 to 50 mol or weight % of terephthalic acid, and from 0 to 15 mol % of other polyamide-forming dicarboxylic acid or acids; and

(c) 30 to 40% by weight, based on the total weight of components (a), (b) and (c), of a further polyamide-forming component which is selected from the group consisting of salts of aliphatic dicarboxylic acids and aliphatic diamines, stoichiometric mixtures of aliphatic dicarboxylic acids and aliphatic diamines and blends of said salts and mixtures, said member subject to the conditions that the average number of carbon atoms per amide group or between each pair of amide-forming groups is at least 9, that the minimum number of carbon atoms between the amide-forming groups is at least 6, and that, when component (b) is not 100% isophthalic acid or isophthalic acid/terephthalic acid mixture, the sum of the weights of the other polyamide-forming dicarboxylic acids in (b) and of component (c) must be from 30 to 40% by weight, based on the total weight of components (a), (b), and (c), said product having a melt viscosity of 2000 to 15000 poises at about 300° C.

4,268,662

PROCESS FOR IMPROVING SEMIPERMEABLE MEMBRANES BY TREATING WITH PROTIC ACIDS OR INORGANIC SALTS

Takezo Sano, Takatsuki; Takatoshi Shimomura, Toyonaka, and Ichiki Murase, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Mar. 5, 1979, Ser. No. 17,326
Claims priority, application Japan, Mar. 17, 1978, 53-31571; Mar. 31, 1978, 53-38608
Int. Cl.[3] C08F *6/00*
U.S. Cl. 528—486 12 Claims

1. A process for treating semipermeable membrane comprising an acrylonitrile polymer containing 40 to 100% by mole of acrylonitrile and having a bubble point of more than 0.1 kg/cm^2, which comprises dipping said semipermeable membrane for a period of one minute or more in an aqueous solution containing an acid selected from the group consisting of inorganic acids, sulfonic acids and carboxylic acids having a concentration of 0.5 N or higher but below that which would dissolve the membrane.

3. A process according to claim 1, wherein said semipermeable membrane is a plasma-treated one.

4,268,663

MACROMOLECULAR GLYCOSIDASE SUBSTRATES

Carl N. Skold, Palo Alto, Calif., assignor to Syva Company, Palo Alto, Calif.

Filed Apr. 10, 1979, Ser. No. 28,777
Int. Cl.[3] C07H *15/00*; C08B *37/02*
U.S. Cl. 536—4 11 Claims

1. A Compound of the formula:

$$M\left\{\begin{matrix}(XAZ)_m\\(XAZ'RChOG)_n\end{matrix}\right.$$

wherein:

M is a polysaccharide macromolecular support of at least about 10,000 molecular weight;

X is a functionality bonded to the backbone of said support and is oxy, amino or non-oxo-carbonyl;

A is alkylene of from about 1 to 6 carbon atoms or alkylenecarbonyl of from about 2 to 6 carbon atoms or is take together with Z to define H or with Z' to form a bond;

Z is amino, carboxy, hydroxy, Z'H or when A is alkylenecarbonyl, halo bonded to alkylene;

Z' is amino or non-oxo-carbonyl;

R is a bond or linking group of from 1 to 16 carbon atoms and from 1 to 8 heteroatoms which are chalcogen and nitrogen, wherein chalcogen is oxy, oxo and the sulfur analogs thereof and nitrogen is amino or amido;

ChO is a divalent chromogenic group which has a phenolic oxy group and has a chromophore which either absorbs light above 300 nm or fluoresces emitting light above 350 nm and has a substantial difference in its spectroscopic properties between the substituted and unsubstituted phenolic oxy group;

G is a glycoside of from about 5 to 6 carbon atoms;

n is at least 1 and not greater than the molecular weight of M divided by 150; and

m is in the range of about 0 to 10 times n.

4,268,664

PROCESS FOR THE PREPARATION OF 1-N-ISOSERYL- OR 1-N-(L-4-AMINO-2-HYDROXYBUTYRYL)-3',4'-DIDEOXYKANAMYCIN B AND INTERMEDIATES THEREOF

Hamao Umezawa, Tokyo, and Shinichi Kondo, Yokohama, both of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Japan

Filed Nov. 26, 1979, Ser. No. 97,896

Claims priority, application Japan, Dec. 14, 1978, 53-153651

Int. Cl.[3] C07H *15/22;* A61K *31/71*

U.S. Cl. 536—10 **12 Claims**

10. An amino-protected derivative of 3',4'-dideoxy-3',4'-didehydrokanamycin B selected from the group consisting of 3,2',6',3''-tetra-N-tert-butoxycarbonyl-3',4'-dideoxy-3',4'-didehydrokanamycin B, 3,2',6'-tri-N-tert-butoxycarbonyl-3',4'-dideoxy-3',4'-didehydrokanamycin B, 2',6',3''-tri-N-tert-butoxycarbonyl-3',4'-dideoxy-3',4'-didehydrokanamycin B, 2',6'-di-N-tert-butoxycarbonyl-3',4'-dideoxy-3',4'-didehydrokanamycin B and 6'-N-tert-butoxycarbonyl-3',4'-dideoxy-3',4'-didehydrokanamycin B.

4,268,665

DERIVATIVES OF ANTIBIOTIC TYLOSIN

Hideo Sakakibara, Mishima; Tatsuro Fujiwara, Shizuoka; Osamu Okegawa, Shizuoka; Toshiyuki Watanabe, Shizuoka; Susumu Watanabe, Shizuoka, and Tetsuo Matsuda, Shizuoka, all of Japan, assignors to Toyo Jozo Kabushiki Kaisha, Shizuoka, Japan

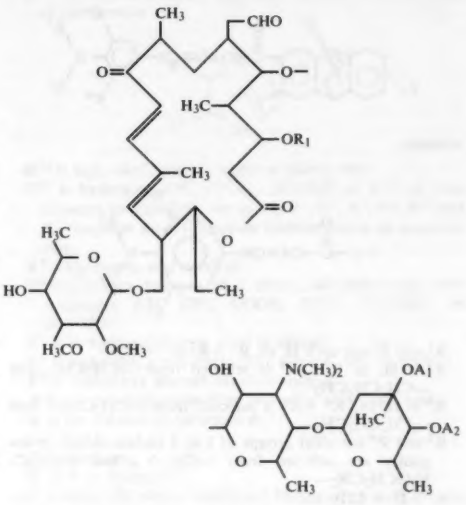
Filed Sep. 14, 1979, Ser. No. 75,661

Claims priority, application Japan, Sep. 14, 1978, 53-113023; Feb. 27, 1979, 54-22340

Int. Cl.[3] A61K *31/71;* C07H *17/08*

U.S. Cl. 536—17 R **8 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or lower alkanoyl, A_1 and A_2 are groups of which one is R_2 and the other is R_3, and R_2 and R_3 are C_{2-6} alkanoyl, or a physiologically acceptable salt thereof.

4,268,666

PROCESS FOR THE DISSOLUTION OF CELLULOSE IN ORGANIC SOLVENTS, SOLUTIONS OBTAINED BY SAID PROCESS, AND PROCESS FOR THE PRODUCTION OF FORMED BODIES OF REGENERATED CELLULOSE FROM SAID SOLUTIONS

Alberto Baldini, Garlasco; Roberto Leoni, Milan; Angelo Calloni, Buscato, and Gianfranco Angelini, Buscate, all of Italy, assignors to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A., Milan, Italy

Filed Mar. 29, 1979, Ser. No. 25,068

Claims priority, application Italy, Apr. 3, 1978, 21922 A/78

Int. Cl.[3] C08B *16/00;* C08L *1/02, 1/08*

U.S. Cl. 536—57 **17 Claims**

1. A process for the dissolution of cellulose in a solvent selected from the group consisting of dimethylformamide, dimethylacetamide and N-methylpyrrolidone characterized in that the cellulose is contacted with an excess of paraformaldehyde and with said solvent at elevated temperatures.

4,268,667

DERIVATIVES OF ARYL KETONES BASED ON 9,10-DIHYDRO-9,10-ETHANOANTHRACENE AND P-DIALKYL-AMINOARYL ALDEHYDES AS VISIBLE SENSITIZERS FOR PHOTOPOLYMERIZABLE COMPOSITIONS

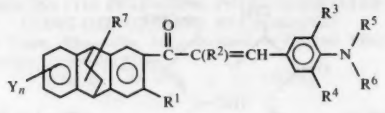
Albert G. Anderson, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Apr. 21, 1980, Ser. No. 142,173

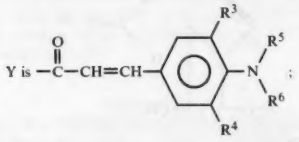
Int. Cl.[3] C07D *241/04;* G03C *1/68*

U.S. Cl. 542—402 **12 Claims**

1. A composition having the formula



wherein:



R^1 and R^2 are each H, or, $R^1 + R^2$ is $—CH_2—$;
R^3 is H, or $R^3 + R^5$ is selected from $—CH_2CH_2—$ and $—CH_2CH_2CH_2—$;
R^4 is H, or, $R^4 + R^6$ is selected from $—CH_2CH_2—$ and $—CH_2CH_2CH_2—$;
R^5 and R^6 are alkyl groups of 1 to 5 carbon atoms, or together are selected from $—Ch_2)_4$ and $—CH_2CH_2OCH_2CH_2—$;
R^7 is H or CH_3; and
n is 0 or 1, with the proviso that when n is 1, R^1 and R^2 are H.

4,268,668

ACID MONOMETHINE-METAL COMPLEX DYESTUFFS

Horst Harnisch, Much, and Peter Rasche, Aachen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

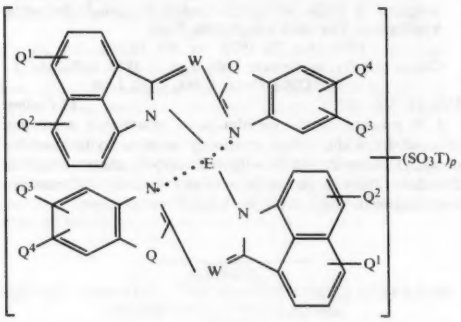
Filed Oct. 19, 1979, Ser. No. 86,614

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1978, 2848622

Int. Cl.[3] **C07F** *13/00, 15/04, 15/06*

U.S. Cl. 8—685 **4 Claims**

1. Acid monomethine-metal complex dyestuffs of the formula



wherein
W represents =N— or =C(CN)—,
E represents divalent nickel, cobalt, zinc or copper,
Q represents —S—, —O— or —N(D)—,
D represents hydrogen, optionally OH—, Cl—, CN—, C_1–C_4-alkoxycarbonyl- or $CONH_2$-substituted C_1–C_3-alkyl, benzyl or phenyl, or C_1–C_2-alkoxycarbonyl,
T represents hydrogen, an alkali metal or ammonium ion or the monovalent equivalent of E,
p represents the numbers 2, 4 or 6,
Q^1 represents hydrogen, chlorine, bromine, C_1–C_2-alkoxy, CN, carboxyl, C_1–C_4-alkoxycarbonyl or a carbamoyl radical which is optionally substituted by one or two C_1–C_4-alkyl radicals,
Q^2 represents hydrogen, C_1–C_2-alkyl, chlorine, bromine, iodine, C_1–C_4-alkoxycarbonyl, benzoyl, C_1–C_4-alkylsulphonyl, including β-sulphatoethylsulphonyl, benzylsulphonyl, phenylsulphonyl, nitro, cyano, C_1–C_4-alkoxycarbonyl, carboxyl, a sulphamoyl or carbamoyl radical which is optionally monosubstituted or disubstituted by C_1–C_4-alkyl, benzyl and/or phenyl radicals, amino, acetylamino, C_1–C_4-alkylsulphonylamino, phenylsulphonylamino, di-(C_1–C_4-alkyl)-amino, piperidino, morpholino, pyrrolidino, C_1–C_4-alkoxy, phenoxy, C_1–C_4-alkylmercapto or phenylmercapto,
Q^1 and Q^2 together can also represent o-phenylenemercapto or o-phenylenecarbonyl,
Q^3 represents hydrogen, C_1–C_4-alkyl, CF_3, chlorine, bromine, C_1–C_4-alkoxy (which is optionally substituted by OH, C_1–C_4-alkoxy or chlorine), phenoxy, phenyl, benzyl, cyclohexyl, C_1–C_4-alkoxycarbonyl, CN, carboxyl, C_1–C_4-alkylsulphonyl, phenylsulphonyl, nitro, C_1–C_4-alkylmercapto or a sulphamoyl or carbamoyl radical which is optionally substituted by one or two C_1–C_4-alkyl radicals,
Q^4 represents hydrogen, C_1–C_4-alkyl, CF_3, chlorine, bromine, C_1–C_2-alkoxy or phenyl and
Q^3 and Q^4 together, when in the o-position to one another, can also represent divalent radicals of the formula $—O—CH_2—O—$, $—O—CH_2—CH_2—O—$, $—O—CH_2—O—CH_2—$, $—CH=CH—CH=CH—$, $—(CH_2)_4—$ or $—CH_2—C(CH_3)_2—CH_2—$.

4,268,669

9-DEOXY-9-METHYLENE-5,6-DIDEHYDRO-PGF$_1$ AMIDES

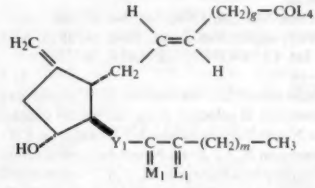
Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 35,144, May 1, 1979. This application Jan. 28, 1980, Ser. No. 116,076

Int. Cl.[3] **C07C** *177/00*

U.S. Cl. 542—429 **1 Claim**

1. A prostaglandin analog of formula VI



VI

wherein Y_1 is trans—CH=CH—, —C≡C—, $—CH_2CH_2—$, or cis—CH=CH—;
wherein M_1 is α-R_5:β-OH or α-OH:β-R_5, wherein R_5 is hydrogen or methyl;
wherein L_1 is α-R_3:β-R_4, α-R_4:β-R_3, or a mixture of α-R_3:β-R_4 and α-R_4:β-R_3 wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein g is 3, 4, or 5;
wherein m is one to 5, inclusive, and
wherein L_4 is
(a) amino of the formula $—NR_{21}R_{22}$, wherein R_{21} and R_{22} are
(i) hydrogen;
(ii) alkyl or one to 12 carbon atoms, inclusive;
(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;
(iv) aralkyl of 7 to 12 carbon atoms, inclusive;
(v) phenyl;

(vi) phenyl substituted with one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
(vii) carboxyalkyl of 2 to 5 carbon atoms, inclusive;
(viii) carbamoylalkyl of 2 to 5 carbon atoms, inclusive;
(ix) cyanoalkyl of 2 to 5 carbon atoms, inclusive;
(x) acetylalkyl of 3 to 6 carbon atoms, inclusive;
(xi) benzoylalkyl of 7 to 11 carbon atoms, inclusive;
(xii) benzoylalkyl substituted by one, 2 or 3 carbon atoms, inclusive, hydroxy, alkoxy of one to 3 carbon atoms, inclusive, carboxy, alkoxycarbonyl of one to 4 carbon atoms, inclusive, or nitro;
(xiii) pyridyl;
(xiv) pyridyl substituted by one, 2 or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive;
(xv) pyridylalkyl of 6 to 9 carbon atoms, inclusive;
(xvi) pyridylalkyl substituted by one, 2 or 3 carbon atoms, inclusive, hydroxy or alkoxy of one to 3 carbon atoms, inclusive;
(xvii) hydroxyalkyl of one to 4 carbon atoms, inclusive;
(xviii) dihydroxyalkyl of one to 4 carbon atoms; or
(xix) trihydroxyalkyl of one to 4 carbon atoms;

with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl;

(b) cycloamino selected from the group consisting of
(i) pyrrolidino,
(ii) piperidino,
(iii) morpholino,
(iv) piperazino,
(v) hexamethyleneimino,
(vi) pyrrolino,
(vii) 3,4-didehydropiperidinyl, or
(viii) pyrrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrrolino, or 3,4-didehydropiperidinyl substituted by one or two alkyl of one to 12 carbon atoms, inclusive;

(c) carbonylamino of the formula—$NR_{23}COR_{21}$, wherein R_{23} is hydrogen or alkyl of one to 4 carbon atoms and R_{21} is other than hydrogen, but otherwise as defined above; or

(d) sulfonylamino of the formula —$NR_{23}SO_2R_{21}$, wherein R_{21} and R_{23} are as defined in (c).

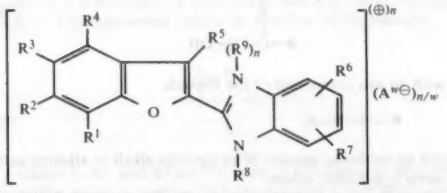
4,268,670

PROCESS FOR THE PREPARATION OF BENZIMIDAZOLYLBENZOFURANES

Bernhard Wehling, Cologne, and Josef Bremen, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 21, 1980, Ser. No. 113,933
Claims priority, application Fed. Rep. of Germany, Feb. 8, 1979, 2904829
Int. Cl.³ C07D *405/04, 405/14*
U.S. Cl. 542—435 **2 Claims**

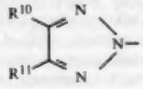
1. In the preparation of a compound of the formula



wherein

R^1, R^3 and R^4 each independently is hydrogen, alkyl, alkoxy or halogen,

R^2 is hydrogen, halogen, alkyl, alkoxy, aryl or a substituent of the formula



R^{10} is aryl, alkyl, aralkyl, styryl or alkoxy and

R^{11} is hydrogen, CN, COOR, CONRR′ or R^{10}, or two adjacent radicals from the group R^1, R^2, R^3, R^4, R^{10} and R^{11} together form a fused-on hydroaromatic or aromatic ring,

R^5 is hydrogen, aryl or alkyl,

R^6 is hydrogen, halogen, alkyl, alkoxy, alkylsulphonyl, arylsulphonyl, CN, CF_3, COOR, SO_3R, CONRR′ or SO_2NRR',

R^7 is hydrogen, halogen, alkyl or alkoxy,

R^8 is hydrogen, alkyl, cycloalkyl, alkenyl, aryl or aralkyl,

R^9 is cycloalkyl, alkenyl, alkyl or aralkyl,

$A^{\ominus}$ is a colorless anion of an inorganic or organic acid,

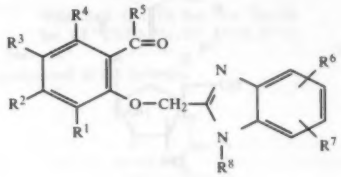
w is the valence of the anion A,

n is 0 or 1,

R is alkyl, and

R′ is R or hydrogen,

and wherein the above-mentioned hydrocarbon radicals and alkoxy radicals and the optionally fused-on ring systems can be substituted by substituents customary in brightener chemistry, by heating a compound of the formula



in the presence of a quaternizing agent containing an R^9 radical, the improvement which comprises effecting the heating in an inert solvent without the addition of a catalyst.

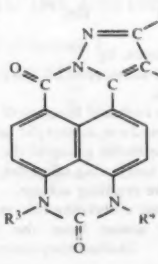
4,268,671

FLUORESCENT DYES

Seiichi Imahori, Kawasaki; Yukichi Murata, Yokohama; Syuichi Maeda, Tokyo, and Sumio Suzuki, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Filed Apr. 13, 1978, Ser. No. 895,948
Claims priority, application Japan, Apr. 20, 1977, 52-45426
Int. Cl.³ C09B *57/00*
U.S. Cl. 544—245 **6 Claims**

1. A heterocyclic dye having the formula:



wherein R^1 represents hydrogen, (C_1–C_8)alkyl, trifluoromethyl, (C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkoxycarbonyl(C_1–C_4)alkyl, phenyl, benzyl or phenethyl; R^2 represents hydrogen, cyano, acetyl, benzoyl, (C_1–C_8)alkoxycarbonyl, (C_1–C_4)alkoxy(C_1–C_4)alkoxycarbonyl, (C_1–C_4)alkoxy(C_1–C_4)alkoxy(C_1–C_4)alkoxycarbonyl, di(C_1–C_4)alkylamino(C_1–C_4)alkoxycarbonyl, cyclohexyloxycarbonyl, tolyloxycarbonyl, phenoxycarbonyl, benzyloxycarbonyl, tetrahydrofurfuryloxycarbonyl, carbamoyl, N-(C_1–C_4)-alkylcarbamoyl, N,N-di(C_1–C_4)alkylcarbamoyl, N-phenylcarbamoyl, or morpholinocarbonyl; and R^3 and R^4 can be the same or different and each represents hydrogen, (C_1–C_8)alkyl, (C_1–C_4)-alkoxy(C_1–C_4)alkyl, benzyl, phenethyl or phenyl which can be substituted by halogen atoms, (C_1–C_4)alkyl groups, or (C_1–C_4)alkoxy groups.

4,268,672

ADENOSINE DEAMINASE RESISTANT ANTIVIRAL PURINE NUCLEOSIDES AND METHOD OF PREPARATION

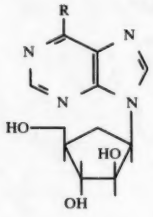
Robert Vince, St. Paul, Minn., assignor to The Regents of the University of Minnesota, Minneapolis, Minn.

Continuation-in-part of Ser. No. 766,947, Feb. 9, 1977, Pat. No. 4,138,562. This application Jan. 5, 1979, Ser. No. 1,072

Int. Cl.³ C07D *473/34*

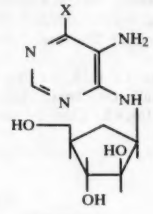
U.S. Cl. 544—265 **5 Claims**

1. A method of preparation of the purine nucleoside analog having the formula:



wherein R is selected from the group of substituent groups consisting of amino, hydroxyl, mercapto, methylmercapto and substituted amino NR′R″ wherein R′ and R″ may be the same or different and are hydrogen, methyl, ethyl, propyl or phenyl, which method comprises:

(A) preparing the intermediate



wherein X is halogen, by

(1) hydrolysing 2-azabicyclo[2.2.1]hept-5-en-3-one under acid conditions.

(2) esterifying the carboxyl function of the resulting cis-4-aminocyclo-pent-2-ene carboxylic acid salt,

(3) acetylating the amino group of the resulting ester,

(4) reducing and acetylating said ester,

(5) epoxidizing the resulting acetate,

(6) hydrolysing and acetylating the resulting epoxide,

(7) forming an amine from the resulting (±)-4α-acetamido-2β, 3α-diacetoxy-1α-cyclopentanemethyl acetate, and

(8) condensing said amine with 5-amino-4,6-dihalopyrimidine to produce said intermediate;

(B) closing the ring of said intermediate by reaction with a ring closing agent selected from the class consisting of diethoxymethyl acetate and triethyl orthoformate, and

(C) replacing the halogen with a substituent from the group consisting of amino, hydroxyl, mercapto, methylmercapto and substituted amino.

4,268,673

5-UNSUBSTITUTED-9,9-DIMETHYL-6,7-BENZOMORPHANS

Antony M. Akkerman, and Geertruida C. van Leeuwen, both of Amsterdam, Netherlands, assignors to ACF Chemiefarma N.V., Maarssen, Netherlands

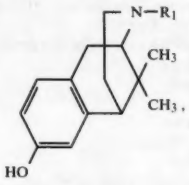
Division of Ser. No. 658,739, Feb. 17, 1976, Pat. No. 4,128,548. This application Jul. 28, 1978, Ser. No. 928,862

Claims priority, application United Kingdom, Feb. 25, 1975, 7891/75

Int. Cl.³ C07D *221/26, 405/06*

U.S. Cl. 546—97 **5 Claims**

1. A benzomorphan compound of the formula



wherein R_1 is a member selected from the group consisting of —CH_2—CH=CH_2, —CH_2—(cyclobutyl), and tetrahydrofurfuryl.

4,268,674

PREPARATION OF SUBSTITUTED OXATRIAZOLES

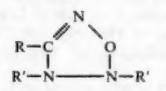
George A. Lee, Wayland, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 851,016, Nov. 14, 1977, abandoned, which is a division of Ser. No. 789,179, Apr. 20, 1977. This application Jul. 16, 1979, Ser. No. 57,640

Int. Cl.³ C07D *273/00*

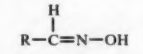
U.S. Cl. 548—125 **12 Claims**

1. A process for preparing an oxatriazole of the formula



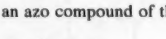
(I)

the process comprising the step of contacting in a liquid reaction medium and with agitation an oxime of the formula



(II)

with an azo compound of the formula



(III)

and an oxidizing amount of an aqueous alkali or alkaline earth metal hypohalite, where:

R is C_1–C_8 saturated aliphatic, C_6–C_{20} aromatic hydrocarbon or an inertly-substituted aliphatic or aromatic hydrocarbon radical, and

R′ is —COOR and each R′ can be the same or different.

4,268,675

3-[5-[1-(DIHALOPHENOXY)ALKYL, ALKYNYL, ALKENYL, OR HALOALKYL]-1,3,4-THIADIAZOL-2-yl]-4-HYDROXY-1-METHYL-2-IMIDAZOLIDINONES

Jerome M. Lavanish, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

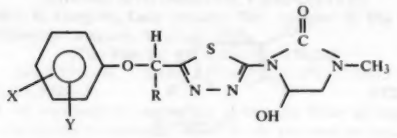
Filed Jul. 6, 1979, Ser. No. 55,228

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.[3] A01N *43/82;* C07D *285/12, 417/02, 417/04*

U.S. Cl. 548—137 20 Claims

1. A compound graphically represented by Formula I



wherein:

X is chlorine, bromine, fluorine, or iodine

Y is chlorine, bromine, fluorine, or iodine, and R is an alkyl of up to four carbon atoms, an alkenyl of up to three carbon atoms, an alkynyl of up to three carbon atoms, or a haloalkyl selected from the group consisting of chloromethyl, bromomethyl, 2-chloroethyl, and 2-bromoethyl.

4,268,676

MITOMYCIN ANALOGS

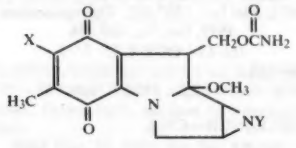
William A. Remers, Tucson, Ariz., assignor to University Patents, Inc., Norwalk, Conn.

Filed Dec. 5, 1979, Ser. No. 100,331

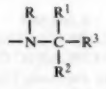
Int. Cl.[3] C07D *487/14*

U.S. Cl. 548—181 2 Claims

1. Compounds of the formula,



wherein: Y is hydrogen or lower alkyl; and X is a thiazolamino radical, a furfurylamino radical or a radical of the formula,



in which R, R^1, and R^2 are the same or different and selected from the group consisting of hydrogen and lower alkyl, and R^3 is selected from the group consisting of lower alkenyl, halo-lower alkenyl, lower alkynyl, lower alkoxycarbonyl, thienyl, formamyl, tetrahydrofuryl and benzene sulfonamide.

4,268,677

SUBSTITUTED OXAZOLIDINES AND THIAZOLIDINES

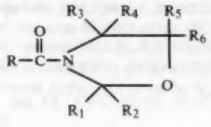
Eugene G. Teach, El Cerrito, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 655,938, Feb. 6, 1976, Pat. No. 4,186,130, which is a continuation-in-part of Ser. No. 484,514, Jul. 1, 1974, abandoned, which is a continuation of Ser. No. 356,548, May 2, 1973, abandoned, which is a continuation-in-part of Ser. No. 297,582, Oct. 13, 1972, abandoned. This application Jun. 18, 1979, Ser. No. 49,853

Int. Cl.[3] C07D *263/04*

U.S. Cl. 548—215 1 Claim

1. A compound having the formula



in which R is haloalkyl having from 1 to 10 carbon atoms, inclusive, halo is selected from chloro and bromo, R_3 is lower alkyl having from 1 to 4 carbon atoms, inclusive, and R_1, R_2, R_4, R_5 and R_6 are each hydrogen.

4,268,678

4-(ARYLALIPHATIC)ISOXAZOLES

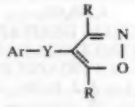
Guy D. Diana, Stephentown, and Philip M. Carabateas, Schodack, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,134

Int. Cl.[3] C07D *261/08;* A61K *31/42*

U.S. Cl. 548—247 9 Claims

1. A compound of the formula:



wherein Ar is phenyl substituted by one or two substituents selected from the group consisting of halogen, lower-alkoxy, nitro and hydroxy;

Y is $(CH_2)_n$ or $O(CH_2)_n$ where n is an integer from 1 to 8; and R is lower-alkyl.

4,268,679

3-[5- OR 3-SUBSTITUTED-5- OR 3-ISOXAZOLYL]-1-ALLYL OR ALKYL-4-SUBSTITUTED-5-SUBSTITUTED OR UNSUBSTITUTED-2-IMIDAZOLIDINONES

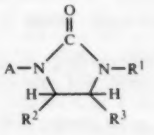
Jerome M. Lavanish, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 19, 1980, Ser. No. 122,633

Int. Cl.[3] A01N *43/54;* C07D *233/02*

U.S. Cl. 548—247 28 Claims

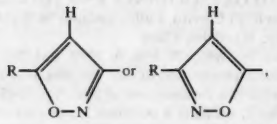
1. A compound of Formula I:



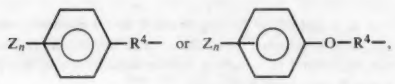
(I)

wherein:

A is



where R is
an alkyl of up to six carbon atoms,
an alkenyl of up to five carbon atoms,
an alkynyl of of up to five carbon atoms,
a cycloalkyl selected from the group consisting of cyclopropyl, cyclobutyl, cyclopentyl, and cyclohexyl.
a haloalkyl of up to six carbon atoms,
$-R^4-O-R^5$ or $-R^4-S-R^5$, where
R^4 is an alkylene of up to six carbon atoms and
R^5 is an alkyl of up to six carbon atoms, or



where Z is nitro (NO_2), chloro (Cl), bromo (Br), fluoro (F), or R^5, and n is 0, 1, 2, or 3;
R^1 is an alkyl of up to three carbon atoms or allyl;
R^2 is hydroxy (OH), chloro (Cl), or bromo (Br); and
R^3 is hydrogen (H), an alkyl of up to four carbon atoms, allyl, or hydroxy (OH).

4,268,680

HETEROCYCLIC DERIVATIVES OF 1-(1,3-DIOXOLAN-2-YLMETHYL)-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

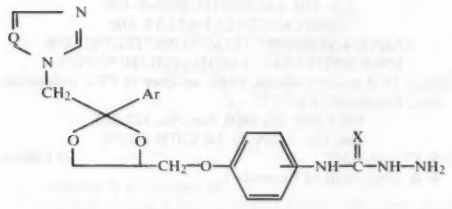
Jan Heeres, Vosselaar; Leo J. J. Backx, Arendonk, and Joseph H. Mostmans, Antwerp, all of Belgium, assignors to Janssen Pharmaceutica N.V., Beerse, Belgium

Division of Ser. No. 853,726, Nov. 21, 1977, Pat. No. 4,160,848, which is a continuation-in-part of Ser. No. 764,265, Jan. 31, 1977, abandoned. This application Jun. 20, 1979, Ser. No. 50,370

Int. Cl.[3] **C07D** *405/06*

U.S. Cl. 548—336 **3 Claims**

1. A chemical compound having the formula:



and the stereochemically isomeric forms thereof, wherein:
Q is CH
Ar is a member selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl being phenyl having from 1 to 3 substituents independently selected from the group consisting of halo, lower alkyl and lower alkyloxy; and
X is a member selected from the group consisting of O and S.

4,268,681

NOVEL 4,5-DICHLORO-IMIDAZOLE DERIVATIVES AND THEIR USE AS PLANT PROTECTION AGENTS

Klaus Sasse, Berg.Gladbach; Gunther Beck; Ludwig Eue, both of Leverkusen, and Robert R. Schmidt, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

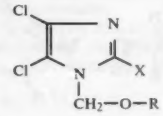
Division of Ser. No. 835,095, Sep. 21, 1977, Pat. No. 4,178,166. This application Apr. 30, 1979, Ser. No. 34,712

Claims priority, application Fed. Rep. of Germany, Oct. 13, 1976, 2646144

Int. Cl.[3] **C07D** *233/68;* **A01N** *9/22*

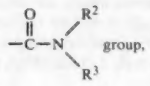
U.S. Cl. 548—337 **2 Claims**

1. A 4,5-dichloro-imidazole of the formula



(I)

in which
X represents a



group,

in which
R^2 represents hydrogen or an alkyl with 1 to 8 carbon atoms,
R^3 represents cyclopentyl or cyclohexyl or represents phenyl which can carry a trifluoromethyl group, and
R represents alkyl with 1 to 12 carbon atoms, it being possible for each of these alkyl radicals to carry phenyl (which itself can carry one or more substituents selected from alkyl with 1 to 6 carbon atoms, alkoxy with 1 to 6 carbon atoms, halogen and trifluoromethyl), or represents cycloalkyl with 5 or 6 carbon atoms in the ring or represents a phenyl radical which is at least disubstituted.

4,268,682

ω-ALKENYL SILANES AND αω-SILYL ALKANES

Alexis A. Oswald, Mountainside, and Lawrence L. Murrell, Elizabeth, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 610,628, Sep. 5, 1975, Pat. No. 4,083,803, which is a continuation-in-part of Ser. No. 265,507, Jun. 23, 1972, Pat. No. 3,907,852. This application Dec. 12, 1977, Ser. No. 859,826

Int. Cl.[3] **C07F** *7/08, 7/18*

U.S. Cl. 556—465 **5 Claims**

1. ω-Alkenyl silanes of the general formula

$$R_{4-y}Si[(Ch_2)z(CH=CH_2]_y$$

wherein R is the same or different and is selected from the group consisting of chlorine, C_1 to C_4 alkoxy, C_1 to C_4 acyloxy, y is 1 or 2 and z is 6 to 28.

4,268,683

PREPARATION OF CARBAMATES FROM AROMATIC AMINES AND ORGANIC CARBONATES

Arthur E. Gurgiolo, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 21, 1980, Ser. No. 123,137

Int. Cl.[3] **C07C** *125/065, 125/067, 125/073, 125/075*

U.S. Cl. 560—24 **8 Claims**

1. In a process for preparing carbamates from an organic carbonate and an aromatic amine in the presence of catalytic

quantities of a Lewis acid catalyst; the improvement which comprises employing as the Lewis acid catalyst, a zinc or divalent tin halide, zinc or divalent tin salt of a monovalent organic compound which has a pKa value of at least 2.8, a zinc or divalent tin salt of trifluoroacetic acid or a mixture of such catalysts and which is soluble in the reaction mixture at the reaction conditions employed; with the proviso that when a zinc or divalent tin salt of trifluoroacetic acid is employed as the only catalyst, the organic carbonate is a cyclic organic carbonate.

4,268,684

PREPARATION OF CARBAMATES FROM AROMATIC AMINES AND ORGANIC CARBONATES

Arthur E. Gurgiolo, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 25, 1980, Ser. No. 124,200

Int. Cl.³ C07C *125/065, 125/067, 125/073, 125/075*

U.S. Cl. 560—24 **5 Claims**

1. In a process for preparing carbamates from an organic carbonate and an aromatic amine in the presence of catalytic quantities of a catalyst; the improvement which comprises employing as the catalyst at least one member selected from the group consisting of

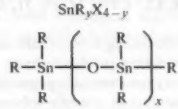
(1) zinc or divalent tin salts of monocarboxylic acids having a pKa value of less than 2.8 other than such salts of trifluoroacetic acid;

(2) divalent cobalt or trivalent cobalt salts of monocarboxylic acids having a pKa value of less than about 2.8;

(3) zinc or divalent tin or divalent cobalt or trivalent cobalt salts of organic materials having more than one —COOH group per molecule;

(4) divalent cobalt or trivalent cobalt salts of a 1,3 diketone having from about 5 to about 10 carbon atoms;

(5) tetravalent alkyl tin compounds or tetravalent alkyl tin oxides represented by the formulas



wherein each R is independently a hydrocarbon group having from 1 to about 10, or a carboxylate group having from 2 to about 10, X is a halogen atom, x has an average value from 1 to about 5, and y has a value of 1 to 4; and

(6) an inorganic zinc compound selected from zinc carbonate, zinc sulfide and zinc oxide and conducting the reaction at a temperature of at least about 200° C.

4,268,685

SALICYLAMIDE ESTERS AND RELATED PHARMACEUTICAL COMPOSITION

Alberto Reiner, Como, Italy, assignor to Neopharmed S.p.A., Milan, Italy

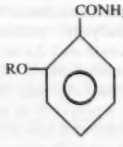
Filed Mar. 12, 1980, Ser. No. 129,660

Claims priority, application Italy, Mar. 27, 1979, 21320 A/79

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—56 **5 Claims**

1. Esters of salicylamide having the general formula:



(I)

wherein R is a radical of an acid selected amongst d-2-(6'-methoxy-2'-naphtyl)-propionic acid, 2[[3-(trifluoromethyl)-phenyl]-amino]-3 pyridine carboxylic acid, 2-{[3-(trifluoromethyl)-phenyl]-amino}-3-pyridincarboxylic acid, 2-(4-isobutylphenyl)-propionic acid, 4-allyloxy-3-chloro-phenylacetic acid, 2-(3-benzoylphenyl)-propionic acid, 2[(2,3-dimethylphenyl-)amino]-benzoic acid and 2-[[3-trifluoromethyl)phenyl]-amino]benzoic acid.

4,268,686

PROPYLENE OXIDE REACTION PRODUCTS

Paul Schäfer, Riehen; Heinz Abel, Reinach, both of Switzerland, and Fritz Mayer, Weil am Rhein, Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 814,376, Jul. 8, 1977, abandoned, which is a division of Ser. No. 671,874, Mar. 29, 1976, Pat. No. 4,055,393. This application Apr. 2, 1980, Ser. No. 136,614

Claims priority, application Switzerland, Apr. 4, 1975, 4293/75

Int. Cl.³ C07C *69/60, 69/80*

U.S. Cl. 560—91 **10 Claims**

1. A propylene oxide reaction product or salt thereof obtained by reacting an adduct of

(a) 1 to 2 moles of an alcohol selected from the group consisting of glycerol, pentaerythritol, sorbitol and trimethylolpropane, and

(b) 4 to 120 moles of 1,2-propylene oxide,

with the reaction product of

(c) 2 to 7 moles of saturated or ethylenically unsaturated aliphatic hydrocarbon dicarboxylic acid or an anhydride thereof containing 2 to 10 carbon atoms, or an aromatic hydrcarbon dicarboxylic acid or an anhydride thereof containing 8 to 12 carbon atoms, and

(d) 1 to 4 moles of an aliphatic diol of formula $HO—(CH_2C-H_2O)_nH$ where n is an integer of 1 to 40, in combination with

(e) 1 to 4 moles of an alkanol of 16 to 20 carbon atoms.

9. A propylene oxide reaction product or salt thereof obtained by reacting an adduct of

(a) 1 to 2 moles of an alcohol selected from the group consisting of glycerol, pentaerythritol, sorbitol and trimethylolpropane, and

(b) 4 to 120 moles of 1,2-propylene oxide,

with the reaction product of

(c) 2 to 7 moles of a saturated or ethylenically unsaturated aliphatic hydrocarbon dicarboxylic acid or an anhydride thereof containing 2 to 10 carbon atoms, or an aromatic hydrocarbon dicarboxylic acid or an ahydride thereof containing 8 to 12 carbon atoms, and

(d) 1 to 4 moles of a polyethylene glycol of average molecular weight in the range of 200 to 1500.

4,268,687

METHOD OF MAKING METHYL AND ETHYL ESTERS OF (3-TRIFLUOROMETHYLPHENYL)-ACETIC ACID

David Y. Tang, Eggertsville, and Arthur M. Foster, Snyder, both of N.Y., assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed Nov. 7, 1979, Ser. No. 92,117

Int. Cl.³ C07C *69/76*

U.S. Cl. 560—105 **7 Claims**

1. A process of producing methyl and ethyl esters of (3-trifluoromethylphenyl)-acetic acid comprising the steps of:

(a) reacting (3-trifluoromethyl)-benzotrichloride with water to form the corresponding benzoyl chloride,

(b) cyanation of the benzoyl chloride by reaction with CuCN to produce the corresponding benzoyl cyanide,

(c) hydrolyzing the benzoyl cyanide to produce the corresponding keto-acid,

(d) hydrogenating the keto-acid in the presence of an hydrogenation catalyst to produce (3-trifluoro-methylphenyl)-alpha-hydroxyacetic acid,

(e) hydrogenating (3-trifluoromethylphenyl)-alpha-

hydroxy-acetic acid in the presence of glacial acetic acid and a hydrogenation catalyst to produce the corresponding substituted acetic acid, and

(f) esterifying the substituted acetic acid using an alcohol selected from the group consisting of methyl and ethyl to obtain the corresponding methyl or ethyl ester of (3-trifluoromethylphenyl)-acetic acid.

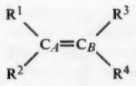
4,268,688

ASYMMETRIC HYDROFORMYLATION PROCESS

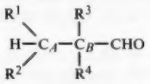
Harold B. Tinker, Creve Couer, and Arthur J. Solodar, St. Louis, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 16, 1973, Ser. No. 333,269
Int. Cl.[3] C07C *45/50*
U.S. Cl. 560—177 **2 Claims**

1. A process for the conversion of prochiral olefins of the formula



to optically active aldehydes of the formula



with the restrictions that

(I) R^1 is not identical to R^2; or

(II) R^3 is not identical to R^4; and furthermore,

(III) neither R^1 nor R^2 can be hydrogen; or

(IV) neither R^3 nor R^4 can be the formyl group (—CHO): and

R^1, R^2, R^3 and R^4 are each independently selected from the group consisting of (a) hydrogen (b) alkyl having at least one and a maximum of twenty-five carbon atoms (c) substituted alkyl said substitution being selected from the group consisting of amino, including alkylamino and dialkylamino, hydroxy, alkoxy, acyloxy, halo, nitro, nitrile, thio, carbonyl, carboxamide, carboxaldehyde, carboxyl, carboxylic ester said ester having a maximum of ten carbon atoms, (d) aryl including phenyl (e) substituted aryl including phenyl said substitution being selected from the group consisting of alkyl having a maximum of six carbon atoms, amino including alkylamino, hydroxy, alkoxy, acyloxy, halo, nitrile, nitro, carboxyl, carboxaldehyde, carboxylic ester, said ester having a maximum of ten carbon atoms, carbonyl, and thio, said aryl substitution being less than four substituents (f) acyloxy, (g) alkoxy, (h) amino including alkylamino and dialkylamino, (i) acylamino and diacylamino, (j) nitro (k) carbonyl (l) nitrile (m) carboxyl (n) carboxamide (o) carboxaldehyde (p) carboxylic ester said ester having a maximum of 10 carbon atoms (q) alkylmercapto, provided that the compound after hydroformulation is chiral, which comprises contacting said prochiral olefin with carbon monoxide and hydrogen at a total pressure of from 50 to 2000 psig, and at a temperature of from 25° C. to 180° C., in the presence of a catalyst system formed from a soluble metal component and optically active ligands where the metal is iridium.

4,268,689

MANUFACTURE OF VICINAL GLYCOL ESTERS FROM SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Continuation-in-part of Ser. No. 968,655, Dec. 11, 1978, abandoned. This application Dec. 14, 1979, Ser. No. 103,763
Int. Cl.[3] C07C *27/06, 69/14, 69/16*
U.S. Cl. 560—263 **24 Claims**

1. In a process for the synthesis of vicinal glycol esters from mixtures of carbon monoxide and hydrogen which comprises the following steps:

(a) Contacting said mixtures of carbon monoxide and hydroigen with a liquid medium containing one or more aliphatic carboxylic acids and a catalyst containing a ruthenium or osmium transition-metal or mixtures thereof,

(b) Heating said reaction mixture to a temperature of between about 100° C. and 350° C., at superatmospheric pressures of 500 psi or greater with sufficient carbon monoxide and hydrogen to satisfy the stoichiometry of the desired ester syntheses, until substantial formation of the desired esters of the vicinal glycols has been achieved,

(c) The improvement which comprises also contacting said mixture with a co-catalyst species selected from the group consisting of alkali metal salts, alkaline earth metal salts, quaternary ammonium salts, iminium salts and quaternary aliphatic phosphonium salts.

4,268,690

PROCESS FOR PRODUCING TEREPHTHALIC ACID OF HIGH PURITY

Makoto Komatsu; Tazuo Ohta; Toru Tanaka; Ryoichi Oda, and Yuji Takamizawa, all of Kurashiki, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Jul. 2, 1979, Ser. No. 55,198
Claims priority, application Japan, Jul. 21, 1978, 53-88992
Int. Cl.[3] C07C *51/16, 51/42*
U.S. Cl. 562—416 **12 Claims**

1. A process for producing terephthalic acid of high purity, which comprises oxidizing p-tolualdehyde as a raw material with a molecular oxygen-containing gas in the presence of bromine ions as a catalyst in a water solvent, introducing the resulting slurry solution containing crude terephthalic acid into an ascending liquid stream of high temperature water of 180°–310° C. having a flow velocity of 0.0001–0.01 m/sec, and withdrawing the water solvent together with the ascending stream of high temperature water upwardly, while allowing crystalline terephthalic acid to settle down through the ascending stream of high temperature water and withdrawing the crystalline terephthalic acid together with a portion of the high temperature water downwardly.

4,268,691

SYNTHESIS FOR 2,3-DICHLORO-4-(HYDROXYBENZOYL)PHENOL

Anthony K. L. Fung, Dollard Des Ormeaux; Donald E. Morrison, Otterburn Parks, and Andre G. Pernet, Montreal, all of Canada, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Aug. 9, 1979, Ser. No. 64,948
Int. Cl.[3] C07C *45/46*
U.S. Cl. 568—322 **8 Claims**

1. A process of making a 2,3-dichloro-4-(hydroxybenzoyl)-phenol consisting essentially in condensing an equimolar amount of an anisoyl chloride and 2,3-dichloroanisole in the presence of 1 to 2 molar equivalents of a Lewis acid, using an aprotic solvent as a reaction medium, at a temperature of between 5° and 30° C. for a period of at least 6 hours, adding 1 to 5 more molar equivalents of a Lewis acid and heating the mixture for a period of at least 30 minutes to a temperature between 40° C. and reflux temperature.

4,268,692
1,9-DIHYDROXYOCTAHYDROPHENANTHRENES AND INTERMEDIATES THEREFOR

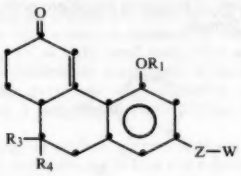
Thomas H. Althuis, Groton; Charles A. Harbert, Waterford; Michael R. Johnson, and Lawrence S. Melvin, Jr., both of Gales Ferry, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 851,503, Nov. 14, 1977, Pat. No. 4,188,495. This application Sep. 24, 1979, Ser. No. 78,475

Int. Cl.[3] **C07C** *49/733, 69/78*

U.S. Cl. 568—326 **12 Claims**

1. A compound selected from the group consisting of those having the formula



wherein

R_1 is hydrogen, benzyl, benzoyl or alkanoyl of 1 to 5;

R_3 is selected from hydrogen, methyl and ethyl;

R_4 is selected from hydrogen, alkyl of 1 to 6 carbon atoms and benzyl;

Z is selected from:

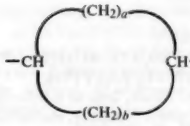
(a) alkylene having from one to nine carbon atoms;

(b)—$(alk_1)_m$—X—$(alk_2)_n$— wherein each of (alk_1) and (alk_2) is alkylene having from 1 to 9 carbon atoms, with the proviso that the summation of carbon atoms in (alk_1) plus (alk_2) is not greater than 9;

m and n are each 0 or 1;

X is selected from O, S, SO and SO_2; and

W is selected from hydrogen, methyl, phenyl, monochlorophenyl, monofluorophenyl and



wherein W_1 is selected from hydrogen, phenyl, monochlorophenyl and monofluorophenyl; a is an integer from 1 to 5 and b is 0 or an integer from 1 to 4, with the proviso that the sum of a and b is not greater than 5.

4,268,693
3-HYDROXYDIPHENYL ETHERS

Rene Muntwyler, Hofstetten, and Kurt Burdeska, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

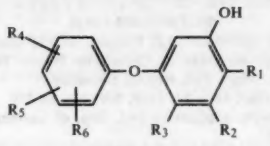
Filed Nov. 14, 1978, Ser. No. 960,697

Claims priority, application Luxembourg, Nov. 21, 1977, 78554

Int. Cl.[3] **C07G** *43/263*

U.S. Cl. 568—637 **10 Claims**

1. 3-Hydroxydiphenyl ethers of the formula



wherein R_1 represents hydrogen, fluorine or chlorine, each of R_2 and R_3 independently represents hydrogen or chlorine, and each of R_4, R_5 and R_6 independently represents hydrogen, fluorine, chlorine or bromine, with the proviso that each phenyl nucleus contains at least one halogen atom, but the total number of halogen atoms in the molecule does not exceed 4.

4,268,694
PROCESS FOR PREPARING PYROGALLOL

John F. Harris, Meldreth, Nr. Royston, and Barrie J. Magill, Cambridge, both of England, assignors to Fisons Limited, Great Britain

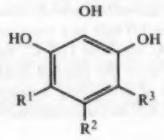
Continuation of Ser. No. 901,836, May 1, 1978, which is a continuation-in-part of Ser. No. 745,923, Nov. 29, 1976, abandoned. This application Apr. 6, 1979, Ser. No. 30,610

Claims priority, application United Kingdom, Nov. 29, 1975, 49142/75; Jul. 31, 1976, 32007/76; May 11, 1977, 19686/77

Int. Cl.[3] **C07C** *37/06, 37/00*

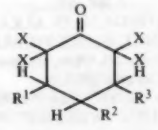
U.S. Cl. 568—763 **22 Claims**

1. A process for preparing a pyrogallol compound of formula:



wherein R^1, R^2 and R^3 are the same or different and each represents a hydrogen atom or an alkyl group of 1–6 carbon atoms or a salt thereof,

which process comprises the direct hydrolysis of a 2,2,6,6-tetracyclohexanone compound of formula:



wherein each X is the same and represents a chlorine or bromine atom, and R^1, R^2 and R^3 are as defined above, by reacting said 2,2,6,6-tetracyclohexanone compound with water in the presence of a catalyst, said hydrolysis being conducted at a temperature of 0°–250° C. and employing 0.3 ml–1 liter of water per gram of said b **2,2,6,6**-tetrahalocyclohexanone compound.

22. A process for preparing pyrogallol or a salt thereof, which process comprises reacting 2,2,6,6-tetrachlorocyclohexanone with water at a temperature of 0°–250° C. and in the presence of a catalyst, employing 0.3 ml–1 liter of water per gram of said 2,2,6,6-tetrachlorocyclohexanone.

4,268,695

PROCESS FOR THE CONTINUOUS PREPARATION OF BUTANE-1,4-DIOL

Erhard Lange, and Manfred Z. Hausen, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Oct. 12, 1979, Ser. No. 84,279

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1978, 2845905

Int. Cl.[3] C07C *31/20*

U.S. Cl. 568—864 10 Claims

1. A continuous process for the preparation of butane-1,4-diol consisting essentially of, in a one-stage process, catalytically hydrogenating the solution which results when maleic anhydride is dissolved in a monohydric aliphatic alcohol, the hydrogenation being carried out in the presence of hydrogen and a copper chromite catalysts at a pressure of 250–350 bar and a temperature of 180°–300° C., thereby preparing butane-1,4-diol.

4,268,696

METHOD FOR PREPARING HEXANITROSTILBENE

Gilbert P. Sollott, Plymouth Meeting, Pa.; Everett E. Gilbert, Morristown, and Maurice Warman, Netcong, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 14, 1980, Ser. No. 111,754

Int. Cl.[3] C07C *79/10*

U.S. Cl. 568—931 10 Claims

1. A process for preparing 2,2′,4,4′,6,6′-hexanitrostilbene comprising the steps of mixing 2,2′,4,4′,6,6′-hexanitrobibenzyl and a quinone having an oxidation-reduction potential of from about 0.4 volt to about 1.0 volt in a reaction solvent at a temperature of about 50° C. to about 110° C., and then recovering the hexanitrostilbene from the reacted mixture, said reaction solvent being capable of promoting a dehydrogenation reaction with said 2,2′,4,4′,6,6′-hexanitrobibenzyl.

4,268,697

SYNTHESIS OF LONG-CHAIN ALKANES HAVING TERMINAL FUNCTIONALITY

Thomas W. Gibson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 21, 1979, Ser. No. 50,839

Int. Cl.[3] C07C *29/72, 19/07, 19/02*

U.S. Cl. 568—911 1 Claim

1. A process for preparing primary substituted n-alkane compounds, comprising:

(a) contacting an α-olefin having a carbon chain length greater than about C_{11} with an olefin metathesis catalyst which is a mixture comprising a tungsten hexahalide compound, a tetraalkyl tin compound, and ethyl acetate;

(b) contacting the product of Step (a) with a biscyclopentadienyl zirconium hydrohalide generated in the reaction mixture; and

(c) contacting the product of Step (b) with an electrophilic reagent selected from N-bromosuccinimide, bromine, iodine, and oxygen.

4,268,698

METHOD OF PREPARING BIS-(CHLOROMETHYL)-TETRACHLOROBENZENES

Klaus D. Steffen, Hennef-Geisbach, Fed. Rep. of Germany, assignor to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Continuation of Ser. No. 3,553, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 895,186, Apr. 10, 1978, abandoned, which is a continuation of Ser. No. 748,266, Dec. 7, 1976, abandoned. This application Oct. 5, 1979, Ser. No. 82,385

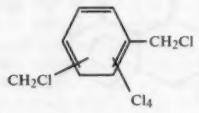
Claims priority, application Fed. Rep. of Germany, Dec. 13, 1975, 2556322

Int. Cl.[3] C07C *25/14*

U.S. Cl. 570—198 13 Claims

1. In the process of preparing bis-chloromethyl tetrachlorobenzene of the formula

(I)



which comprises in a first stage contacting xylene with chlorine for formation of tetrachloroxylene, in the presence of $FeCl_3$ or $FeCl_3.6H_2O$ as catalyst for the reaction, and in a second stage contacting the tetrachloroxylene with chlorine for formation of said tetrachlorobenzene in the presence of ultraviolet light or a compound which decomposes radially a radical catalyst for the second stage reaction, the improvement which comprises performing the second stage at a temperature of 60°–85° C. in the presence of the catalyst from the first stage and in the presence of hexamethylenetetramine for complexing with the catalyst, the weight ratio of hexamethylenetetramine to ferric chloride present in the second stage being from 0.1:1 to 2.5:1.

4,268,699

HYDROALKYLATION USING NICKEL-RUTHENIUM CATALYST ON ZEOLITE TYPE SUPPORT

Timothy P. Murtha, and Ernest A. Zuech, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,601, Jul. 21, 1978, abandoned. This application Dec. 7, 1979, Ser. No. 101,378

Int. Cl.[3] C07C *5/03, 5/10*

U.S. Cl. 585—268 8 Claims

1. A process for the hydroalkylation of an aromatic compound which comprises subjecting it to hydroalkylation conditions in the presence of a catalyst comprising an acidic crystalline zeolite type support having a substantial proportion of crystalline zeolitic component therein, said support having been prepared by removing alkali metal or aklaline earth metal ions by cation exchange treatment with an ammonium compound followed by calcination to convert ammonium ions to protonic acid sites, said support having thereon ruthenium and nickel, the nickel being supplied by nickel chloride to a predominantly alkali metal cation exchanged aluminosilicate support when the alkali metal to aluminum ratio is in the approximate range 0/1 to 0.182/1 and to a predominantly alkaline earth metal cation exchanged aluminosilicate support when the alkaline earth metal to aluminum ratio is in the approximate range 0/1 to 0.091/1; and by nickel bromide when the support is predominantly a cation exchanged alkali metal or alkaline earth metal support and said ratios are respectively 0.182/1 to 0.4/1 and 0.091/1 to 0.2/1; and wherein ruthenium is added to the support after the calcination.

4,268,700

PROCESS FOR PRODUCING GASOLINE OF HIGH OCTANE NUMBER AND PARTICULARLY LEAD FREE GASOLINE, FROM OLEFININC C_3-C_4 CUTS

Quang Dang Vu, Paris; Bernard Juguin, Rueil-Malmaison; Bernard Torck, Boulogne sur Seine, and Michel Hellin, Andresy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 28, 1979, Ser. No. 79,728
Claims priority, application France, Sep. 28, 1978, 78 28171
Int. Cl.[3] C07C *2/08, 2/58*
U.S. Cl. 585—302 13 Claims

1. A process for producing high octane gasoline, comprising the steps of:

(a) contacting an olefinic C_3 hydrocarbon cut comprising propylene with a catalyst, obtained by contacting at least one group IV to VIII metal compound with at least one hydrocarbylaluminum compound, in an oligomerization zone under propylene oligomerization conditions, and recovering a first oligomerizate boiling in the gasoline range;

(b) contacting an olefinic C_4 hydrocarbon cut comprising isobutene, isobutane and at least one n-butene with a silica-alumina catalyst in an oligomerization zone at a temperature of from 50° to 150° C. under conditions effecting conversion of at least 80% of the isobutene and less than 40% of the n-butenes in the C_4 cut;

(c) fractionating the effluent from step (b) and separately recovering a second oligomerizate boiling in the gasoline range and an unreacted C_4 hydrocarbon fraction comprising isobutane and at least one n-butene;

(d) contacting the unreacted C_4 hydrocarbon fraction from step (c) with an alkylation catalyst in an alkylation zone under aliphatic hydrocarbon alkylation conditions, and recovering an alkylate boiling in the gasoline range; and

(e) blending at least a portion of said alkylate with at least a portion of said first oligomerizate and at least a portion of said second oligomerizate to produce a blended high octane gasoline.

4,268,701

PROCESS FOR PRODUCING HIGH OCTANE GASOLINE AND PARTICULARLY LEAD-FREE GASOLINE

Quang Dang Vu, Paris; Yves Chauvin, Le Pecq; Jean Gaillard, Lyons; Bernard Torck, Boulogne sur Seine, and Michel Hellin, Andresy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Sep. 14, 1979, Ser. No. 75,486
Claims priority, application France, Sep. 14, 1978, 78 26644
Int. Cl.[3] C07C *2/08, 2/58*
U.S. Cl. 585—329 10 Claims

1. A process for producing a blended high octane gasoline, which comprises the steps of:

(a) oligomerizing an olefinic C_3 hydrocarbon cut comprising propylene, and recovering an oligomerizate boiling in the gasoline range;

(b) hydroisomerizing an olefinic C_4 hydrocarbon cut comprising isobutene, isobutane, 1-butene and 2-butene under 1-butene isomerizing conditions, and recovering an isomerized C_4 cut having an increased proportion of 2-butene and a decreased proportion of 1-butene relative to said olefinic C_4 hydrocarbon cut;

(c) fractionating the isomerized C_4 cut from step (b) and separately recovering a first fraction having an increased proportion of isobutene and isobutane relative to said isomerized C_4 cut, and a second fraction having an increased proportion of 2-butene relative to said isomerized C_4 cut;

(d) hydrogenating said first fraction from step (c) under isobutene hydrogenating conditions, and recovering an effluent having an increased proportion of isobutane relative to said first fraction;

(e) admixing the effluent from step (d) and said second fraction from step (c), subjecting the resultant mixture to hydrocarbon alkylation conditions, and recovering an alkylate boiling in the gasoline range; and

(f) blending at least a portion of the oligomerizate from step (a) with at least a portion of the alkylate from step (e) to produce a blended high octane gasoline.

4,268,702

CATALYTIC CONVERSION OF AROMATIC FRACTIONS IN THE PRESENCE OF STEAM

Daniel Duprez, Poitiers, and Michel Grand, Serezin du Rhone, both of France, assignors to Elf France, Paris, France

Filed Jun. 27, 1979, Ser. No. 52,359
Claims priority, application France, Jul. 7, 1978, 78 20265
Int. Cl.[3] C07C *12/02*
U.S. Cl. 585—411 6 Claims

1. A process for the catalytic conversion of aromatic fractions containing variable proportions of C_5 to C_{11} non-aromatic hydrocarbons, to obtain benzene and hydrogen, by water dealkylation of the aromatic hydrocarbons and simultaneous reforming of the non-aromatic hydrocarbons, which comprises: contacting an aromatic fraction with steam at a temperature of from 350° C. to 600° C., at a pressure of 1 to 80 bars and a water to hydrocarbon charge ratio by liquid volume of 0.2 to 4, in the presence of a dealkylation catalyst consisting essentially of rhodium on a mixed spinel $(M_xM'_{1-x})\ Al_2O_4$, support M being a non-noble group VIII metal, and M' being selected from the group consisting of magnesium, manganese, and copper at a rate of 0.1 to 10 liquid volumes of aromatic fraction per volume of catalyst per hour.

4,268,703

DEHYDROCOUPLING OF TOLUENE

Alex N. Williamson, Greensboro, N.C., and Samuel J. Tremont, Manchester, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,943
Int. Cl.[3] C07C *2/72*
U.S. Cl. 585—428 16 Claims

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a{}^1M_b{}^2O_x$$

where M^1 is lead and M^2 is at least one element selected from the group consisting of thallium, beryllium, calcium, strontium, barium, and radium, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1 and M^2 in the oxidation state in which they exist in the composition to yield the dehydrocoupled toluene product.

4,268,704

DEHYDROCOUPLING OF TOLUENE

Samuel J. Tremont, Manchester, Mo.; Alex N. Williamson, Greensboro, N.C., and Arthur J. Solodar, University City, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 10, 1979, Ser. No. 101,945
Int. Cl.[3] C07C *2/72*
U.S. Cl. 585—428 17 Claims

1. A process for dehydrocoupling toluene which comprises contacting the toluene in the vapor phase at a temperature between about 450° C. and about 650° C. with an inorganic metal/oxygen composition represented by the empirical formula:

$$M_a{}^1M_b{}^2M_c{}^3O_x$$

where M^1 is lead, M^2 is at least one element selected from

thallium, and Group 2a of the Periodic Table of the Elements, and mixtures thereof, and M^3 is at least one element selected from zinc, phosphorus, arsenic, thorium, the lanthanides, Groups 1a, 3b, 4b, and 8 of the Periodic Table of the Elements, and mixtures thereof, and wherein a is 1, b is 0.01 to 10, c is 0.01 to 10, and x is a number taken to satisfy the average valences of M^1, M^2, and M^3 in the oxidation states in which they exist in the composition to yield the dehydrocoupled toluene product.

4,268,705

ADDITION OF MONOMER IN PRODUCTION OF LIQUID POLYMERS

Richard F. Palmer, Vancouver, Wash., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1980, Ser. No. 132,559

Int. Cl.[3] **C07C** *2/72*

U.S. Cl. 585—429 **10 Claims**

1. The polymerization of at least one of a conjugated diene and a vinyl aromatic in the presence of a reaction medium containing an alkyl aromatic, an organolithium compound and a transmetallation compound and adapted to produce a liquid polymer, which comprises adding at least one monomer in increments and allowing time between addition of increments for substantially complete conversion of the incrementally added monomer and substantially complete transmetallation from living polymer formed to alkyl aromatic present in the medium.

4,268,706

HYDROCARBON DEHYDROGENATION METHOD AND NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 905,907, May 15, 1978, Pat. No. 4,199,438. This application Mar. 17, 1980, Ser. No. 130,675

The portion of the term of this patent subsequent to Apr. 22, 1997, has been disclaimed.

Int. Cl.[3] **C07C** *5/367, 2/64, 2/70*

U.S. Cl. 585—430 **20 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at hydrocarbon dehydrogenation conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % tantalum; wherein the platinum group, catalytically available cobalt and tantalum components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platium group component is present in the elemental metallic state; wherein substantially all of the tantalum component is present in a positive oxidation state; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon dehydrogenation conditions or in a mixture of these states.

4,268,707

HYDROCARBON DEHYDROGENATION WITH A NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 13,489, Feb. 21, 1979, which is a division of Ser. No. 894,958, Apr. 10, 1978, Pat. No. 4,148,833, which is a continuation-in-part of Ser. No. 758,616, Jan. 12, 1977, Pat. No. 4,087,381, which is a division of Ser. No. 633,890, Nov. 20, 1975, Pat. No. 4,024,052. This application May 9, 1980, Ser. No. 148,117

Int. Cl.[3] **C07C** *5/41*

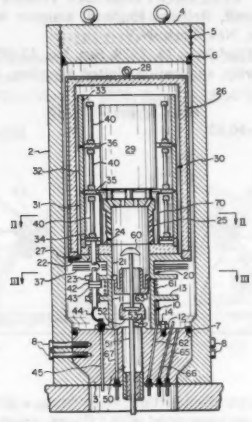
U.S. Cl. 585—434 **22 Claims**

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon at dehydrogenation conditions with a nonacidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 5 wt. % alkali metal or alkaline earth metal, and about 0.01 to about 5 wt. % lanthanide series metal; wherein the platinum group metal, catalytically available cobalt, lanthanide series metal and alkali metal or alkaline earth metal are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group metal is present in the elemental metallic state; wherein substantially all of the lanthanide series metal is present in an oxidation state above that of the elemental metal; wherein substantially all of the catalytically available cobalt is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon dehydrogenation conditions or in a mixture of these states; and wherein substantially all of the alkali metal or alkaline earth metal is present in an oxidation state above that of the elemental metal.

4,268,708
APPARATUS FOR VACUUM SINTERING AND HOT ISOSTATIC PRESSING

Charles W. Smith, Jr., Fairview, and Franz X. Zimmerman, Erie, both of Pa., assignors to Autoclave Engineers, Inc., Erie, Pa.

Filed Apr. 19, 1979, Ser. No. 31,541
Int. Cl.³ F27D *11/00, 7/06*
U.S. Cl. 13—20 **11 Claims**



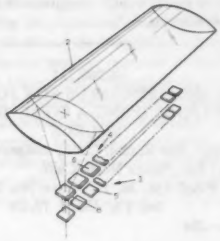
1. An apparatus for heating a workpiece at elevated temperatures both under vacuum and under superatmospheric pressures comprising:
(1) a vacuum-pressure vessel,
(2) a hood insulating the vessel from the workpiece,
(3) a pedestal extending up into the furnace,
(4) a first electrical heating means spaced about the pedestal entirely below the top of the pedestal,
(5) at least one second electrical heating means spaced about the workspace above the hearth,
(6) means for separately controlling the first and at least one second electrical heating means,
(7) means for connecting the interior of the vessel to means for pressurizing the vessel with a selected atmosphere, and
(8) means for connecting the interior of the vessel to means for evacuating the vessel to create a vacuum therein,
whereby the furnace can provide substantially uniform temperture distribution to the workspace when the vessel is evacuated by radiation from the at least one second electrical heating means and when the vessel is pressurized by convection from the first electrical heating means.

4,268,709
GENERATION OF ELECTRICAL ENERGY FROM SUNLIGHT, AND APPARATUS

Norman L. Boling, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 921,419, Jul. 3, 1978, Pat. No. 4,188,238. This application Dec. 20, 1979, Ser. No. 105,452
The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.
Int. Cl.³ H01L *31/00*
U.S. Cl. 136—247 **2 Claims**

1. A process which comprises
(1) concentrating solar radiation optically with lens or reflector means to provide optically concentrated radiation and
(2) spectrally dividing said optically concentrated radiation by
(i) absorbing a portion of said concentrated radiation and concentrating absorbed radiation in the form of longer wave length emitted luminescent radiation by the process of total internal reflection in a first luminescent solar collector,
(ii) passing the residual portion of said optically concentrated radiation through said first luminescent solar collector, and repeating steps (i) and (ii) using one or more subsequent luminescent solar collectors in series acting on the residual optically concentrated radiation passing through the preceding luminescent solar collector,

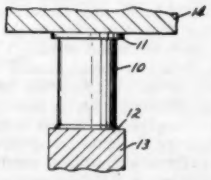


(3) passing the concentrated emitted luminescent radiation in said first collector to a first photovoltiac cell optically coupled to a relatively small surface area of said first luminescent solar collector and passing the concentrated emitted luminescent radiation in each said subsequent luminescent solar collector to a different photovoltaic cell having a different bandgap than said first cell, which different cell is optically coupled to a relatively small surface area of the subsequent luminescent solar collector.

4,268,710
HOT-JUNCTION ELECTRODE MEMBERS FOR COPPER/SILVER CHALOCOGENIDES

Edward F. Hampl, Jr., Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 828,567, Aug. 29, 1977, Pat. No. 4,180,415, which is a continuation of Ser. No. 526,598, Nov. 25, 1974, abandoned, which is a continuation-in-part of Ser. No. 321,222, Jan. 5, 1973, Pat. No. 3,853,632, Ser. No. 242,219, Apr. 7, 1972, Pat. No. 3,852,118, and Ser. No. 291,938, Sep. 25, 1972, Pat. No. 3,873,118, said Ser. No. 321,222, is a continuation of Ser. No. 635,948, Apr. 20, 1967, abandoned, which is a continuation-in-part of Ser. No. 463,148, Jun. 11, 1965, abandoned, said Ser. No. 242,219, is a continuation of Ser. No. 36,145, May 11, 1970, abandoned. This application Aug. 29, 1979, Ser. No. 70,892
Int. Cl.³ H01J *35/30*
U.S. Cl. 136—205 **3 Claims**



1. In a thermoelectric generator that includes at least a length of thermoelectric leg consisting essentially of metal ingredients selected from copper and silver and chalcogen ingredients selected from selenium and tellurium; the ingredients of said length of thermoelectric leg being within the following proportions:
for tellurium compositions,

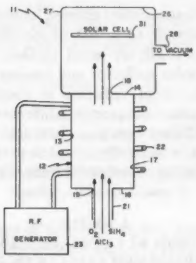
(a) 32.5 atomic percent≦tellurium≦33.7 atomic percent
(b) 27 atomic percent≦copper≦67 atomic percent
(c) 0 atomic percent≦silver≦40 atomic percent
for selenium compositions,
(a) 32.5 atomic percent≦selenium≦33.7 atomic percent
(b) 60 atomic percent≦copper≦67 atomic percent
(c) 0 atomic percent≦silver≦7 atomic percent; and
a member that engages the hot end of said length of thermoelectric leg to make electrical and thermal contact with said length of leg and consists essentially of electrically conductive metal which comprises at least 50 weight-percent molybdenum.

4,268,711

METHOD AND APPARATUS FOR FORMING FILMS FROM VAPORS USING A CONTAINED PLASMA SOURCE

Harold S. Gurev, San Rafael, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Filed Apr. 26, 1979, Ser. No. 26,598
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—256 **15 Claims**



1. In a method for forming a mixed oxide and/or nitride solid coating on the surface of an article by use of a contained plasma source having a cavity and means for generating an RF field within the cavity, the steps supplying a compound vapor which is formed independent of evaporation of the cavity, supplying a gas to the cavity to create a gas plasma within the cavity using the gas supplied to the cavity and causing the gas plasma to exit from the cavity independent of externally generated magnetic fields and to impinge upon the surface of the article to be coated, forming the solid coating on the surface of the article by chemical reaction of the compound vapor and the gas plasma selecting at least one of the chemical elements of the film to be supplied from a compound vapor and chemically reacting the compound vapor with at least one other chemical element of the film by utilizing at least some of the gases.

10. In an apparatus for forming a mixed oxide and/or nitride solid film on the surface of an article by the use of a contained plasma source, container means defining a cavity and having an exit opening therein in communication with the cavity, a housing coupled to the container and forming a chamber which is in communication with the exit opening in the container, means for supplying a vacuum to the chamber in the housing and the cavity within the container, said housing being formed to receive the article on which the film is to be formed, means for establishing an RF field in the cavity, means for introducing a gas into the cavity for creating a gas plasma to create a higher pressure in the cavity whereby the gas plasma is discharged independent of externally generated magnetic fields through the exit opening and impinges upon the surface to be coated and means for supplying a vapor which is formed independent of evaporation of the cavity and causing it to chemically react with the gas plasma to provide a mixture forming a solid film on the surface of the article.

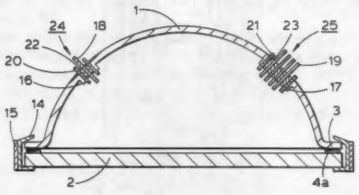
15. In a solar cell construction having an integral cover, a solar cell, a film formed integral thereon covering the surface of said cell and formed of a composition selected from $SiO_2+Si_3N_4$, $SiO_2+Al_2O_3$ or $AlN+Si_3N_4$ systems, said composition having a coefficient of expansion similar to that of the solar cell.

4,268,712

ELECTRON DISPLAY TUBES

Colin D. Overall, Reigate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1979, Ser. No. 42,655
Claims priority, application United Kingdom, May 30, 1978, 23760/78
Int. Cl.³ H01J *29/86*
U.S. Cl. 174—50.63 **12 Claims**



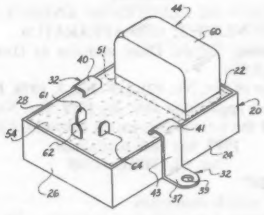
1. An electron display tube comprising a flat, glass faceplate, a metal cone provided with a flange, a metallic pressure-deformable material bonding said flange to said face-plate, the pressure-deformable material having a melting-point of more than 300° C., at least two lengths in combination of a substantially U-shaped metal channel member having asymmetrically disposed limbs extending around substantially the whole periphery of the face-plate and clamping said face-plate and flange, a first limb of said channel member extending along the outside main surface of the face-plate, the second limb of said channel member diverging from the edge of the face-plate with respect to the first limb and urging the flange of the cone portion by means of a wedging action towards the face-plate, and a metal rimband tightly embracing the lengths of the channel member so as to maintain the pressure-deformable material in compression.

4,268,713

FLASHER FOR VEHICLE LIGHTS

Robert P. Donley, 2500 Lane Rd., Columbus, Ohio 43221, and Terry Dawson, 1367 Crestview St., Reynoldsburg, Ohio 43068

Filed Sep. 27, 1978, Ser. No. 946,112
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—52 PE **8 Claims**



1. A controller for vehicle lights comprising, in combination a circuit board housing including spaced side walls and a bottom wall forming a cavity; a circuit board positioned in the cavity and including a circuit board ground terminal; an electrically conductive mounting and grounding means including an internal flange forming a second ground terminal engaging

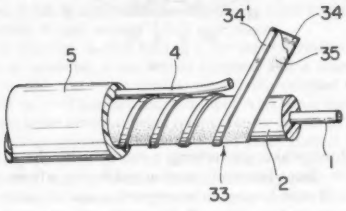
said circuit board ground terminal, an intermediate flange extending to the exterior of said cavity, and an external flange extending beyond a side wall and forming a housing supporting mount for connection with a vehicle in grounded relationship therewith; and a resinous insulating and sealing material within said cavity in sealed surrounding relationship with said engaging ground terminals.

4,268,714

SHIELDED WIRE

Akinori Mori, Kanuma, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 16, 1979, Ser. No. 39,475
Int. Cl.³ H01B 7/18
U.S. Cl. 174—108 **8 Claims**



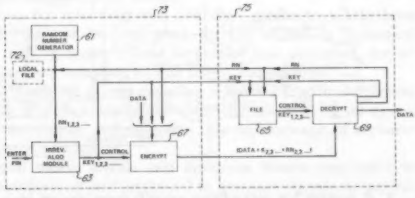
1. In a shielded wire including at least one central core, and insulation layer coated thereover, the improvement comprising; a shield layer helically wound around said insulation layer, a ground wire positioned along the outer surface of said shield layer and a sheath covering said shield layer and said ground wire, said shield layer comprising a composite tape having on one side a layer having good adhesion properties with plastic materials, and having on the other side a metal layer, said composite tape being longitudinally folded with a portion of said metal layer covering a portion of said adhesion layer, and such folded composite tape being helically wound over said insulation layer such that the inner surface consists of only said metal layer, and such that the outer surface consists of a helically disposed pattern of the folded metal portion and said layer having good adhesion properties with plastics, said ground wire being in contact with said folded metal portion.

4,268,715

METHOD AND APPARATUS FOR SECURING DATA TRANSMISSIONS

Martin M. Atalla, Menlo Park, Calif., assignor to Atalla Technovations, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 902,444, May 3, 1978. This application Jan. 16, 1979, Ser. No. 3,898
Int. Cl.³ H04L 9/00
U.S. Cl. 178—22 **28 Claims**



1. A method of securing a data-handling transaction initiated by an authorized individual utilizing prestored identification information about the individual and identification information supplied by the individual, the method comprising:

generating a selected number;

forming a first input as the combination of at least two of the signals selected from the data involved in the transaction, and the selected number and the identification information supplied by the individual;

forming a second input as the combination of at least another two of said signals;

logically encrypting the first and second inputs to form a transaction authorization code, according to a selected encoding scheme;

transmitting the transaction authorization code with data involved in the transaction and with the selected number to a remote location;

logically encrypting the prestored identification information about the individual and the data involved in the transaction and the selected number received at the remote location to form a transaction authorization code in accordance with said selected encoding scheme; and

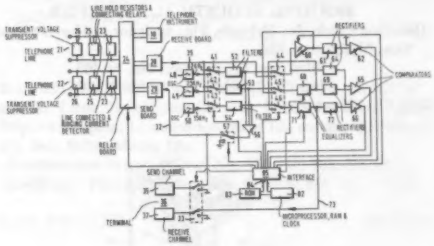
comparing the transaction authorization codes at the remote location to provide an output indication upon parity thereof of the unaltered transmission and reception of the selected number, the transaction authorization code and the data involved in the transaction by the authorized individual.

4,268,716

AUDIO TELECONFERENCING

Ian S. Groves; David R. Guard, and Steven Whalley, all of Ipswitch, England, assignors to Post Office, London, England

Filed Dec. 5, 1978, Ser. No. 966,636
Claims priority, application United Kingdom, Dec. 5, 1977, 50517/77
Int. Cl.³ H04M 3/56
U.S. Cl. 179—1 CN **9 Claims**



1. A control unit for use in establishing a four-wire connection between two audio teleconference terminals, each having line send and line receive channels, via a pair of telephone lines of the public switched telephone network, said unit comprising:

switching means arranged to provide connections to a pair of telephone lines,

signalling means connectable to said lines via said switching means to enable another similar control unit to be signalled via a telephone line,

compensation means,

line send and receive circuitry connected to said switching means and having an input for connection to the send channel and an output which can be connected to the receive channel of a teleconference terminal via said compensation means,

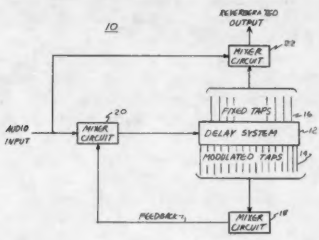
said compensation means being adjustable automatically to compensate for the characteristics of a telephone line connected to the unit, and

a central control means for controlling operation of the control unit including the automatic adjustment of said compensation means.

4,268,717
TIME-MODULATED DELAY SYSTEM AND IMPROVED REVERBERATION SIMULATOR USING SAME

Christopher H. Moore, 53 Lawndale St., Belmont, Mass. 02178

Filed Apr. 19, 1979, Ser. No. 31,585
Int. Cl.[3] H04R 3/00
U.S. Cl. 179—1 J 13 Claims



1. A reverberation simulator comprising:

a delay system having a plurality of temporally fixed output delay taps and a plurality of time-modulated delay output taps;

first means for combining the output from said plurality of time-modulated taps to produce a feedback signal;

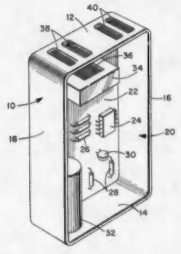
second means for combining said feedback signal and an audio input signal for submission to said delay system;

third means for combining said audio input signal and the outputs from a plurality of said temporally fixed taps to produce a simulated reverberated audio output signal.

4,268,718
HOUSING ACOUSTICAL AMPLIFIER

Hamilton Clark, Jr., Orlando, Fla., assignor to Harris Corporation, Melbourne, Fla.

Filed Sep. 5, 1979, Ser. No. 56,403
Int. Cl.[3] H04M 1/00; G10K 11/00
U.S. Cl. 179—1 E 12 Claims



2. A portable receiver in which the audio output signal produced thereby is acoustically amplified without requiring additional components or a supply of electrical power for amplification, comprising:

a receiver housing having a cavity therein;

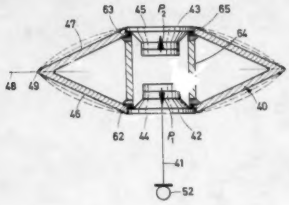
means located with the interior of said housing for introducing audio output signals in a predetermined frequency range into said cavity, to thereby acoustically couple said audio output signals to said cavity; and

said housing, being vented so that the resonant frequency of said housing lies approximately in the center of said predetermined frequency range to thereby cause said housing to operate as a tuned resonator for acoustically amplifying the audio output signals from said audio signal introducing means.

4,268,719
LOUDSPEAKER ARRANGEMENTS

Josef W. Manger, Karlstadter Strasse 30, 8725 Arnstein, Fed. Rep. of Germany

Continuation of Ser. No. 911,063, May 31, 1978, abandoned.
This application Sep. 17, 1979, Ser. No. 75,899
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1977, 2725346
Int. Cl.[3] H04R 1/20
U.S. Cl. 179—1 E 19 Claims

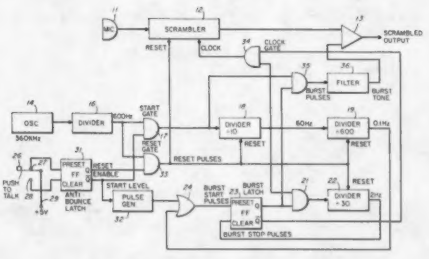


1. A loudspeaker comprising: a substantially closed housing having an discus-like configuration and having a front wall and a rear wall each having an inner portion and an outer portion with an outer edge, said walls being formed and arranged such that the distance between decrease in a direction from said inner to the outer portions such that the outer edges thereof abut along at least two side edges; and at least two similar electro-acoustic transducers, each having a diaphragm, wherein one transducer is arranged in the front wall and the other transducer is arranged in the rear wall and wherein the two transducers are so connected that when connected to a common source said diaphragms are moved simultaneously outwardly or inwardly, respectively.

4,268,720
SCRAMBLER SPEECH TRANSMISSION AND SYNCHRONIZATION SYSTEM

Stirling M. Olberg, Waltham; Vernon J. Fowler, Billerica, and Bruce Anderson, Tewksbury, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed May 25, 1979, Ser. No. 42,661
Int. Cl.[3] H04K 1/00
U.S. Cl. 179—1.5 R 11 Claims



1. A system for scrambling speech transmission in a coded manner comprising

a microphone for converting speech in its audio form to an electrical form;

scrambling means coupled to said microphone for coding individual segments of speech in accordance with an internal key code, said scrambling means being adapted to be synchronized by a reset pulse for resetting the order of

coding within said scrambling means and by a clock pulse which determines the start of each segment;

a "talk" switch having an "on" and an "off" position;

oscillating means adapted to provide a signals at a burst frequency;

first frequency dividing means for converting said burst frequency to a clock frequency;

first two-input AND gate means having one input coupled to receive said oscillating means, having a second input adapted to receive an enabling level when said "talk" switch is in said "on" position, and having an output coupled to an input of said first frequency dividing means;

second frequency dividing means having an input coupled to an output of said first frequency dividing means for determining the frequency of synchronization burst tones;

second two-input AND gate means having one input coupled to the output of said first frequency dividing means;

a first dividing counter means having an input coupled to an output of said second AND gate means;

a first flip-flop means having a set input terminal, a reset input terminal, a set output terminal and a reset output terminal, said set output terminal being coupled to a second input of said second two-input AND gate means, said reset input terminal being coupled to an output of said first dividing counter means, and said reset output terminal being coupled so as to enable signals at said clock frequency to synchronize said scrambling means when an enabling level is on said reset output terminal;

a pulse generator adapted to provide a pulse when said "talk" switch is placed into an "on" position, said pulse being coupled to the set input terminal of said first flip-flop means;

means responsive to said "talk" switch being in said "off" position for resetting said scrambling means, said first frequency dividing means, said second frequency dividing means, and said first dividing counter means;

third two-input AND gate means having one input coupled to said output of said first AND gate, and having a second input coupled to said set output terminal of said first flip-flop means; and

an output terminal coupled to an output of said scrambling means, and coupled to an output of said third AND gate.

4,268,721

PORTABLE TELEPHONE COMMUNICATION DEVICE FOR THE HEARING IMPAIRED

Donald L. Nielson; David J. Fylstra, and Roy H. Stehle, all of Palo Alto, Calif., assignors to SRI International, Menlo Park, Calif.

Filed May 2, 1977, Ser. No. 792,761
Int. Cl.[3] H04M *1/21, 11/00*
U.S. Cl. 179—2 C **2 Claims**

1. A telephone communication terminal for enabling the use of a conventional telephone for communication with the hearing impaired, comprising:

a portable container means,

means for attaching said container means to a telephone handset to be supported thereby including acoustical coupling means at one surface of said container, for removably coupling to said telephone handset,

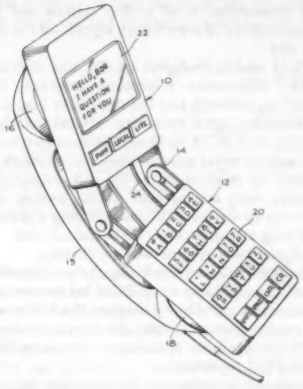
said container means including a keyboard with a complete set of alphanumeric characters for use to generate signals representing any complete selected message of alphanumeric characters,

circuit means within said container means responsive to actuation of said keyboard to generate signals responsive thereto suitable for transmittal through said acoustical coupling means over an acoustical telephone line,

pickup means within said container means responsive to acoustical signals received from said telephone handset to generate signals related thereto,

a display device,

control means including modem means adopted to simultaneously control the transmittal of the signals generated by said circuit means through said acoustical coupling means over the acoustical telephone line, and to respond to the signals generated by said pickup means, said control means include means to activate said display means to provide a display of alphanumeric characters related to the acoustical signals received from said telephone handset, and said container means comprises two separate



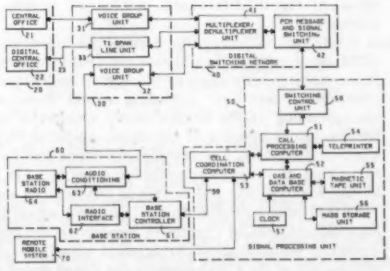
parts, a first part including a first acoustical coupling means for coupling to the transmitter of a telephone handset, a second part including a second acoustical coupling means for coupling to the receiver of said telephone handset, and extensible hinge means coupling said first and second parts together, whereby said two parts are substantially foldable on one another.

4,268,722

RADIOTELEPHONE COMMUNICATIONS SYSTEM

Richard I. Little, Barrington; Barry D. Lubin, Schaumburg, and Stephen L. Spear, Lincolnwood, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 876,956, Feb. 13, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 72,875
Int. Cl.[3] H04M *1/00*
U.S. Cl. 179—2 EB **26 Claims**



1. In a telephone system comprising:

(a) a land-line telephone system having analog ports and including a land-line switching network for providing communication paths to a plurality of land-line telephones; and

(b) a mobile radiotelephone system coupled to the land-line switching network for providing communication paths between mobile radiotelephones and between mobile radio-telephones and land-line telephones, said mobile radio telephone system including:

(i) a plurality of base stations having analog ports, eac of the base stations providing communication paths to mobile ratiotelephones in the vicinity thereof;

(ii) a digital switching network for switching between a predetermined number of pairs of incoming and outgoing serial pulse-code-modulated (PCM) bit streams, each serial PCM bit stream formatted in a plurality of PCM frames of a predetermined number of PCM channels, each PCM channel having corresponding message bits representative of analog signals and signal bits representative of supervisory signals for the PCM channel; and

(iii) PCM analog-to-digital (A/D) and digital-to-analog (D/A) converters interposed between the digital switching network and the respective base stations and between the digital switching network and the land-line networ, said PCM A/D and D/A converters interfacing analog ports of the land-line network and base stations to pairs of incoming and outgoing PCM bit streams, each analog port having analog signals and supervisory signals and further having a pre-established incoming and outgoing PCM channel; and

(c) said digital switching network including:

(i) a multiplexer for multiplexing the predetermined number of the incoming serial PCM bit streams to provide an incoming parallel bit stream, the incoming parallel bit stream having a time slot corresponding to each PCM channel in the predetermined number of incoming serial PCM bit streams;

(ii) a time-slot-interchanger for interchanging the incoming PCM channels in the incoming parallel bit stream according to an ordering of time slots in a routing memory to provide an outgoing parallel bit stream; and

(iii) a demultiplexer for demultiplexing the outgoing parallel bit stream to provide the predetermined number of outgoing serial bit streams; and

(d) wherein said digital switching network includes improvement which comprises:

means for providing a system clock signal and a system multiframe-synchronization signal marking the beginning of each system multiframe having a predetermined number of system frames, the outgoing serial PCM bit streams being transmitted by the demultiplexer in successive system multiframes in response to the system clock signal;

said PCM A/D and D/A converters being adapted to recover the system clock signal from their respective outgoing serial PCM bit streams and transmitting with the recovered system clock signal their respective incoming serial PCM bit streams formatted in successive incoming multiframes having a number of incoming PCM frames equal to the predetermined number of system PCM frames;

said multiplexer including, for each of the incoming serial PCM bit streams, a first-in first-out (FIFO) memory, a frame counter responsive to the system multiframe-synchronization signal for providing system frame signals corresponding to the predetermined number of system frames, means coupled to the incoming serial PCM bit stream for detecting an incoming multiframe-synchronization signal, means coupled to the incoming serial PCM bit stream for receiving and storing in consecutive order in the FIFO memory the subsequent incoming signal bits for each incoming PCM channel in response to the detected incoming multiframe-synchronization signal, means for reading out of the FIFO memory the stored signal bits in response to selected ones of the system frame signals, means for multiplexing the read-out signal bits to provide an incoming signal bit stream;

signal detecting means coupled to the incoming signal bit stream for sensing the state of the incoming signal bits for each of the respective incoming PCM channels;

signal processing means responsive to the sensed incoming signal bits for ordering the time slots in the routing memory to route incoming PCM channels to selected outgoing PCM channels and for generating corresponding outgoing signal bits adapted to a pre-established format recognizable by the outgoing PCM channels; and

means for applying the outgoing signal bits to the outgoing parallel bit stream.

4,268,723

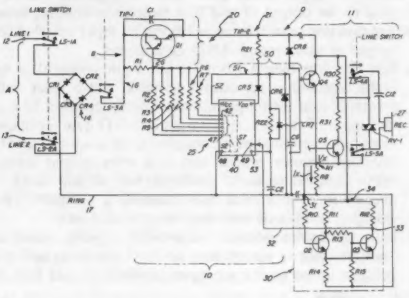
CIRCUITS AND METHODS FOR INITIALIZING THE LOOP CURRENT OF A TELEPHONE SET

Raymond G. Taylor, Shreveport, La., assignor to Western Electric Company, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,252

Int. Cl.[3] H04M *1/00*

U.S. Cl. 179—81 R **10 Claims**



1. A circuit for initializing the loop current of a telephone set of the type wherein a central office D.C. input supply voltage is applied to input terminals of the set to power the telephone set, which voltage can vary from one telephone set to another depending on transmission line characteristics and other variables, the initializing circuit comprising:

a variable conductance device connected in series between the input terminals and the speech network so as to establish a series D.C. loop current at a selected node in the speech network that is a function of the input supply voltage and of the conductance of said device; and

means for monitoring the loop current and for varying the conductance of said variable conductance device so as to set the loop current at a level within a preset, desired range, independent of the voltage applied to the input terminals of the set.

4,268,724

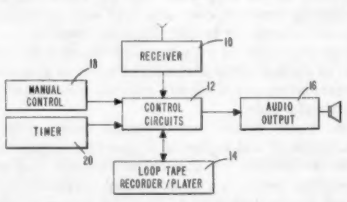
CONTINUOUS TIMED SEGMENT BROADCAST RECORDER SYSTEM

William Hubbard, 1906 Kanawha Ave., Dunbar, W. Va. 25064

Filed Jun. 13, 1979, Ser. No. 48,302

Int. Cl.[1] G11B *31/00*

U.S. Cl. 369—7 **13 Claims**



1. A broadcast receiver/recorder system for periodically receiving and recording selected broadcast events, comprising:

a radio receiver having an output;

a tape recorder having record and playback modes, a record

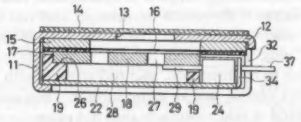
input and a playback output, said tape recorder normally being in its record mode;
audio output means;
means connecting said receiver output to said record input of said tape recorder;
timer means for selectively and periodically activating said tape recorder to record selected periodic events;
first control means for selectively shifting said tape recorder from its record mode to its playback mode and for connecting said playback output to said audio output means; and
second control means responsive to said tape recorder for holding said tape recorder in its playback mode for a preselected time period and for thereafter shifting said recorder back to its record mode, whereby said recorder is activated by said timer means periodically to record each of said selected events, and is selectively activated by said first control means to play back said selected events.

4,268,725

ELECTRET MICROPHONE

Sadayoshi Nakagawa, and Mitsuharu Shinohara, both of Fukuoka, Japan, assignors to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Aug. 15, 1979, Ser. No. 66,722
Claims priority, application Japan, Aug. 21, 1978, 53-114913[U]; Oct. 2, 1978, 53-135641[U]
Int. Cl.³ H04R *19/04*
U.S. Cl. 179—111 E **9 Claims**



1. An electret microphone comprising:
a cylindrical capsule having a front plate which is provided with an aperture for introducing sound into the capsule;
an electret diaphragm disposed in the capsule adjacent to and in opposing relation to said front plate;
a back electrode plate in said capsule disposed adjacent to said diaphragm in opposing relation thereto;
a ring-shaped back electrode holder disposed in the capsule coaxially therewith for holding the back electrode plate in place;
a side wall of said ring-shaped back electrode holder being provided with a slot which faces towards the inner peripheral surface of the capsule; and
an impedance conversion element disposed in said slot, said impedance conversion element having an input terminal which is connected to the back electrode plate and an output terminal which is led out of the capsule through an opening in the side wall of the capsule.

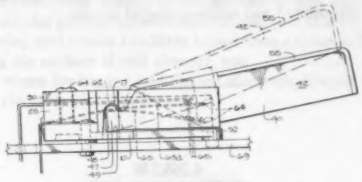
4,268,726

MULTIPLE CANTILEVER SPRING CONTACT SWITCH

Pak-Jong Chu, Ottawa, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Aug. 17, 1979, Ser. No. 67,332
Int. Cl.³ H01H *3/04, 9/02, 21/80;* **H04M** *1/08*
U.S. Cl. 179—164 **20 Claims**

1. A multiple cantilever spring contact switch, comprising:
a base, at least one spacer, and a cover, in superposed relationship;
said base comprising a flat central web, a rib extending upwardly along a rear edge of said web, and a plurality of clamping surfaces on said rib;
clamping surfaces on opposite sides of said spacer;
clamping surfaces on an underside of said cover;
the clamping surfaces on said rib and the clamping surfaces on one side of said spacer forming a first series of pairs of opposed clamping surfaces;
the clamping surfaces on the underside of said cover and the clamping surfaces on the other side of said spacer forming a second series of pairs of opposed clamping surfaces;
the pairs of clamping surfaces having relative predetermined inclinations;
a cantilever spring contact member clamped at one end between each pair of clamping surfaces to form at least two sets of spring contact members, the contact members in each set in stacked relationship and the contact members of a set having a predetermined inclined relationship, a contact member in each set having an extended free end;



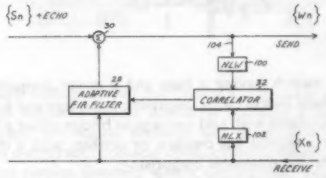
said base, at least one spacer, cover and cantilever spring contact members forming a switch assembly;
an actuating member pivotally mounted on said switch assembly and including means for engaging said extended free ends of contact members, whereby on pivoting of said actuating member each contact member having said extended free end is deflected;
and means for connecting an electrical conductor to each spring contact member.

4,268,727

ADAPTIVE DIGITAL ECHO CANCELLATION CIRCUIT

Bhagwati P. Agrawal, Stamford, and Kishan Shenoi, Fairfield, both of Conn., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 14, 1979, Ser. No. 20,593
Int. Cl.³ H04B *3/20*
U.S. Cl. 179—170.2 **19 Claims**



1. An adaptive digital echo cancellation circuit for a telephone line circuit comprising:
finite impulse response digital filter means having a plurality of delay stages and having coupled thereto a plurality of received digital words, for obtaining for each sample interval of N words the product of N of said digital words and a plurality of updated coefficients each associated with one of said digital filter stages to derive an output representative of the value of an undesired signal portion of a plurality of transmitted digital words;
summation circuit means having coupled thereto a plurality of transmitted digital words having superimposed thereon an undesired signal portion, and the output of said digital filter representative of the value of said undesired signal portion, and having an output comprised substantially of said transmitted digital words;
correlator means coupled to said digital filter means for

obtaining an N term average correlation for each sample interval of N words of digital signals representative of N of said transmitted digital words and N of said received digital words to derive a control output representative of the instantaneous undesired signal present in said received transmitted digital words to vary said coefficients each N word sample interval in accordance with said control output; and

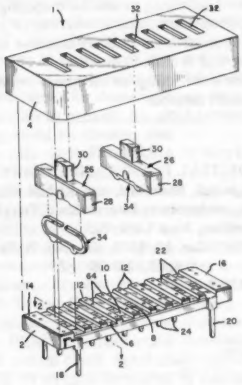
nonlinear circuit means for deriving said digital signals respectively representative of said transmitted and received digital words, such that said representative digital signals are of a bit length less than the bit length of said respective transmitted and received digital words.

4,268,728

SWITCH ENCODER

William H. Rose, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 23, 1979, Ser. No. 32,190
Int. Cl.[3] H01H *15/00*
U.S. Cl. 200—16 R **3 Claims**



1. In a switch having a base and a cover cooperating to contain plural sliders each comprising a carriage and a resilient contact moveable with said carriage to bridge either a first bus contact or a second bus contact, or neither, with a third bus contact, the improvement comprising:

each said resilient contact includes a metal strip having its thickness in a linear plane and formed with open loop portions frictionally retained across said thickness in a slotted recess defined between flexible walls of a respective said carriage,

said loop portions having free ends opposing each other and impinging against said carriage,

said loop portions being integrally joined remote from said free ends and provided with a projecting first portion slidably impinged on said third bus contact, and a second projecting portion impinged alternately in turn on said first and second bus contacts and an insulation portion of said base,

said flexible walls being biased toward and away from each other upon movement between and registration within a series of detents along a slotted opening of said cover, and

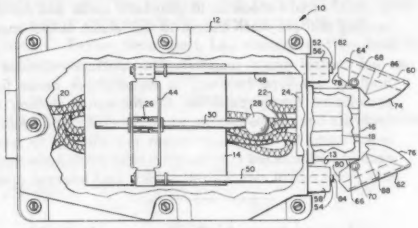
means on each said carriage flexing said free ends toward said first and second projecting portions.

4,268,729

PLUG AND RECEPTACLE INTERLOCK

Bronius Gaizauskas, Chicago, Ill., assignor to Akzona Incorporated, Asheville, N.C.

Filed Sep. 4, 1979, Ser. No. 71,816
Int. Cl.[3] H01H *9/20*
U.S. Cl. 200—50 B **15 Claims**



1. An electrical connector comprising:

a plug and a receptacle, each including electrical contacts, said receptacle including a housing, said housing enclosing an electrical switch;

at least one ear member mounted on said housing and adapted to engage said plug when said plug is inserted into said receptacle, said ear member having a hole drilled therein and an abutting surface thereon;

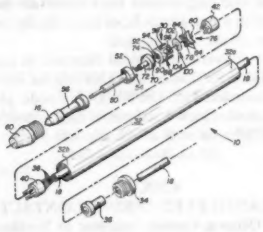
a rod mechanically coupled to said switch, said rod moving in tandem with switch movement, said rod aligned with and adapted to be received in the hole in said ear when said plug is received in said receptacle enabling said switch to be turned on, said rod aligned with and adapted to abut against said abutting surface when said plug is not received in said receptacle thus not permitting said switch to be turned on.

4,268,730

STYLUS PEN ACTUATING SWITCH

Bobby L. Higgins, Dallas, and Luther M. Johnson, Garland, both of Tex., assignors to Camsco, Inc., Richardson, Tex.

Filed Aug. 30, 1979, Ser. No. 70,972
Int. Cl.[3] H01H *3/00*
U.S. Cl. 200—52 R **10 Claims**



1. In combination with a stylus pen, an actuating switch comprising:

a first contact;

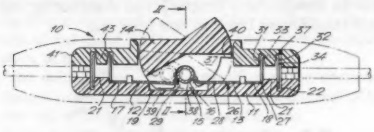
a second contact; and

spring means disposed between said first and second contacts, such that when pressure is applied to the stylus pen to actuate the actuating switch, said spring means compresses to simultaneously contact both said first and second contacts to positively actuate the actuating switch and provide a sensed indication of movement to an operator to alert the operator of closure of the actuating switch.

4,268,731
ELECTRICAL SWITCH

Josef A. Kourimsky, Bensheim, and Lothar H. W. Nix, Walldorf, both of Fed. Rep. of Germany, assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 7, 1979, Ser. No. 18,008
Claims priority, application United Kingdom, Mar. 8, 1978, 9106/78
Int. Cl.[3] H01H *1/16, 21/40, 3/00*
U.S. Cl. 200—67 AA 5 Claims

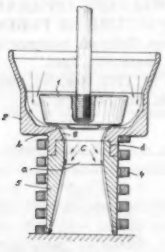


1. An electrical switch comprising a pair of terminals, fixed spaced apart from each other in an insulating housing; a metal roller; a finger-piece of insulating material having a cavity receiving the roller between a first and a second switching position in which the roller engages only one and both terminals respectively and wherein engagement between the roller and either terminal traps the roller in the cavity in said first and second switching positions, the one terminal being resilient and including a cantilever spring extending in the direction of roller movement, said one terminal having a transverse roller engaging portion protruding into the path of the roller movement to produce an overcenter action which biases the roller toward respective switching positions relative to the one terminal as said roller moves and resiliently deforms said one terminal, said roller engaging portion providing the fulcrum for the overcenter action, and the roller being received as a free fit in the cavity to permit limited movement of the roller in the switching direction independently of the finger-piece, the arrangement being such that the one terminal is resiliently flexed to bias the roller against the second terminal in the second switching position.

4,268,732
ARC QUENCHING CHAMBER FOR HIGH BREAKING CAPACITY CIRCUIT BREAKERS

Nicolae Gheorghiu, and Basarab D. Guzun, both of Bucharest, Romania, assignors to Institutul de Cercetari si Modernizari Energetice, Bucharest, Romania

Filed Jul. 5, 1977, Ser. No. 812,729
Int. Cl.[3] H01H *33/70*
U.S. Cl. 200—148 R 2 Claims



1. A quenching chamber for a high-voltage circuit breaker, wherein said chamber comprises:

a first contoured fixed electrode;

a second contoured movable electrode positioned to abut said first electrode along mutual contact surfaces and axially separable therefrom to form a slit between said contact surfaces for a high-velocity arc-quenching stream flowable between said contact surfaces during the separation thereof, said second electrode having an outwardly flaring cup wholly receiving said first electrode to form, in the direction of said stream travel, an increasingly constricted, velocity-increasing gas-flow passageway with said first electrode upstream of said slit, said second electrode having a tubular portion inwardly of said slit and leading away from said first electrode, said cup being fixed to said tubular portion, said tubular portion forming a channel converging initially axially away from said slit and thereafter diverging axially away from said slit;

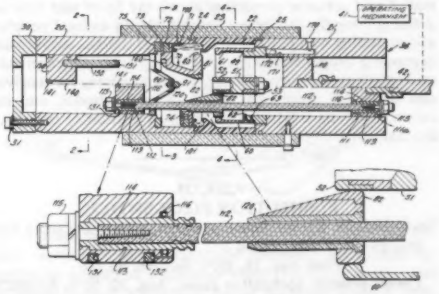
an inwardly facing step formed by a counterbore in said second electrode directly at the junction of said cup and said tubular portion between said slit and said channel for inducing said stream to adhere to and form a Coanda flow along the surface of said channel; and

spring means for biasing said second electrode toward said first electrode.

4,268,733
LIQUID SF_6 PUFFER TYPE CIRCUIT INTERRUPTER

Ruben D. Garzon, Malvern, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 19, 1977, Ser. No. 843,573
Int. Cl.[3] H01H *33/88*
U.S. Cl. 200—150 G 11 Claims



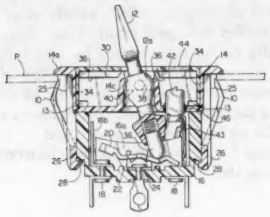
1. A high voltage circuit interrupter comprising: a pair of cooperable contacts; nozzle means for defining a fluid flow path through the region between said cooperable contacts when said cooperable contacts open; cylinder means and first and second pistons disposed within said cylinder means; said first and second pistons disposed on respective opposite sides of said nozzle means for forcing fluid through said nozzle means; an operating means for moving said first piston toward said nozzle means and said second piston away from said nozzle means for forcing fluid located between said pistons through said nozzle means, said operating means also being for simultaneously opening said contacts; the amount of said fluid located between said pistons at all times filling the volume therebetween and remaining constant during circuit interruption; said fluid being SF_6 in the liquid phase; said piston being simultaneously movable by said operating means to produce a pressure differntial in said SF_6 between said pistons for causing said SF_6 to move through said nozzle means generally away from said first piston and toward said second piston, said pressure differential remaining substantially constant during circuit interruption; a housing for enclosing said cooperable contacts and said first and second pistons; and SF_6 in the liquid phase filling said housing.

4,268,734

ENVIRONMENTALLY SEALED TOGGLE SWITCH

Richard W. Sorenson, Avon, Conn., assignor to Carlingswitch, Inc., West Hartford, Conn.

Filed Jul. 30, 1979, Ser. No. 61,605
Int. Cl.³ H01H *9/04, 9/16*
U.S. Cl. 200—302 **6 Claims**



1. An electric switch housing for protecting the fixed contacts and movable contact bridging member from environmental conditions external to the switch, said housing comprising an upwardly open dielectric base for said contacts and bridging member, a dielectric cover bracket secured to said base for isolating the contents of the base from the environment, said cover bracket having a recessed portion and a generally cylindrical upstanding boss defined centrally of said recessed portion, an actuator snugly received in a central opening of said boss and having a shoulder portion engaging an inturned lip on said boss, an inner end of the actuator adapted to engage the movable contact bridging member and an upper end of said actuator projecting above the lip of said boss and defining a toggle, said cover bracket having a raised peripherally extending wall portion with openings therein, a cover with depending flanges defining laterally projecting tabs received in said openings, said cover having a center opening for receiving said upwardly projecting toggle of said actuator, and said cover providing a lid for said recessed portion of said cover bracket.

4,268,735

PUSHBUTTON PILOT SWITCH

Norio Iwakiri, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Aug. 23, 1979, Ser. No. 69,136
Claims priority, application Japan, Aug. 30, 1978, 53-106751
Int. Cl.³ H01H *9/16*
U.S. Cl. 200—314 **8 Claims**

1. A pushbutton pilot switch comprising:

an elongated housing having an opening at one end thereof and including an engaging member formed inside the housing at a substantially intermediate portion thereof, said elongated housing having a plurality of terminal projections each having one end situated within housing and the other end projecting outwards from said housing for external electric connection;

a switch arrangement accommodated within said elongated housing, said switch arrangement electrically connected to at least two of the terminal projections;

a base housed inside said elongated housing and including an engageable member adapted to be engaged with said engaging member for preventing the base from being slidably moved outside the housing the engagement between said engaging member and engageable member being disengaged when the base is applied with an external force acting in a direction outwardly of the housing through said opening;

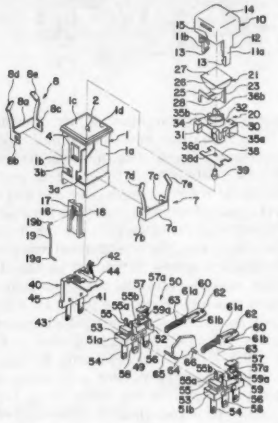
an illuminating member mounted on said base;

an actuator coaxially housed in said elongated housing for axial movement between depressed and projected positions, said actuator when held in any one of the depressed and projected positions having one end extending outwards from said housing through said opening and the other end housed within said housing, said other end of the actuator being detachably connected to the base and including an actuating member which actuates the switch arrangement when the actuator is moved to said depressed position;

said illuminating member comprising a light transmitting block,

at least one light emitting diode carried by said block, and optically coupled to said at least one light emitting diode,

means for demountably coupling said illuminating member light transmitting block to said base; and



a plate member removably secured to the base, said plate member having an electrically resistive film laminated thereon and being electrically connected to said at least one light emitting diode by plate terminals such that said electrically resistive film controls the actuating current for lighting said at least one light emitting diode of said illuminating member;

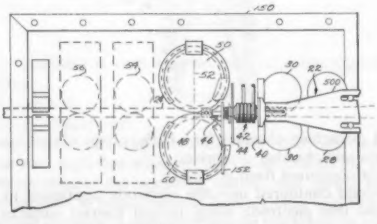
whereby, when the voltage of said electrical source coupled to the pushbutton switch changes, dependent upon usage, the resistor of said push button pilot switch may be readily exchanged to accommodate the voltage change.

4,268,736

INDUCTION WELDING APPARATUS FOR MANUFACTURE OF TUBING

Michel C. Cuvelier, Liege, Belgium, assignor to American Electric Fusion Co., Inc., Nashville, Tenn.

Filed Apr. 13, 1978, Ser. No. 896,361
Int. Cl.³ H05B *6/02*
U.S. Cl. 219—8.5 **8 Claims**



1. In a tube induction welding apparatus,

(a) an induction coil surrounding the path of the tube,

(b) means downstream of the coil for forcing the edges of the tube to be welded into contact at a given point
(c) and a modifier between the coil and the forcing means,
(d) the modifier being an electrically conductive member having at least a portion thereof positioned to overlie the path followed by the slit which exists in the tube upstream of the contact point,
(e) the modifier having a dimension lengthwise of the tube, which dimension lies within the space between the downstream end of the coil and the aforesaid contact point,
(f) the modifier including skirt portions extending laterally from said modifier portion overlying the path of the slit in the tube and curved to substantially conform to the curvature of the outer surface of the tube when the latter is in place in the apparatus
(g) the skirt portions of the modifier at the upstream end thereof extending to encompass at least one half of but less than all of the circumference of the tube.

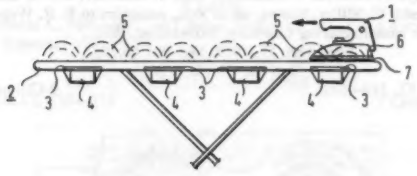
7. In a tube induction welding apparatus,
(a) an induction coil surrounding the path of the tube,
(b) a pair of pressure rolls downstream of the coil for forcing the edges of the tube into contact,
(c) and means to cool the rolls by flowing coolant thereover,
(d) the cooling means including a perforated tube above the upper periphery of each roll for cascading coolant down over the exterior surface of each rool except in the sector of the roll whereat contact and welding of the tube edges occurs, said cooling means further including a plate for conducting heat away from said rolls, and a shield plate surrounding at least a portion of said pressure rolls, said shield plate thermodynamically coupled to a coolant source.

4,268,737

CORDLESS INDUCTIVE FLAT IRON APPARATUS

Peter Paschakarnis, Schwebheim, and Wolfgang Fischer, Königsberg, both of Fed. Rep. of Germany, assignors to Sachs-Systemtechnik GmbH, Schweinfurt am Main, Fed. Rep. of Germany

Filed Apr. 11, 1978, Ser. No. 895,515
Int. Cl.[3] H05B *6/10, 6/06*
U.S. Cl. 219—10.49 R **8 Claims**



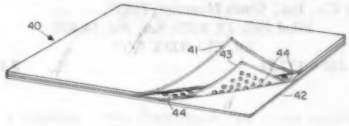
1. A cordless flat iron apparatus comprising:
(a) a flat iron including a sole plate of conductive material and a handle electrically and thermally insulated from said sole plate;
(b) an ironing board movable into a position to define an approximately horizontal, upwardly directed work supporting surface;
(c) energy transmitting means carried on said ironing board and including oscillator means and a plurality of coils associated with said oscillator means and positioned closely subjacent said surface for generating a magnetic field of a polarity alternating at high frequency above said work supporting surface in said position of the ironing board and for thereby inductively transmitting energy to said sole plate when said flat iron is placed on said surface, said coils being spaced from each other in a direction parallel to said surface, each of said coils being an element of an independent high frequency oscillator;
(d) temperature sensing means for sensing the temperature of said sole plate by said iron;
(e) transmitter means operatively connected to said sensing means providing a wireless signal in response to the sensed temperature;
(f) means for supplying power to said transmitter wherein the output of one of said coils is connected to a rectifier stage, said rectifier stage being coupled to a smoothing stage, said smoothing stage having output terminals for supplying power to said transmitter;
(g) receiver means carried by said ironing board for receiving said signal, and a reference signal generator carried by said board to generate a reference signal;
(h) a comparator circuit connected to said receiver means and to said reference generator for comparing the received signal and said reference signal, and for controlling the output of said oscillator means in response to the relationship between the compared signals; and
(i) an additional surface is also included adjacent to said work supporting surface for depositing said iron, an additional coil being provided subjacent said additional surface, said coil being coupled to one of the high frequency oscillators.

4,268,738

MICROWAVE ENERGY MODERATOR

Thomas J. Flautt, Jr.; Edward J. Maguire, Jr., and David L. Richardson, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 837,074, Sep. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 821,934, Aug. 4, 1977, abandoned. This application Nov. 25, 1977, Ser. No. 854,941
Int. Cl.[3] H05B *6/80;* **A21D** *10/02*
U.S. Cl. 219—10.55 F **24 Claims**



1. A microwave energy moderator comprising structure which is initially macroscopically relatively transparent to microwave energy of a predetermined frequency range, said moderator further comprising means for undergoing a sufficient structural transition that it will become substantially less transparent to said microwave energy as the temperature of said means is increased through a predetermined range of temperature.

4,268,739

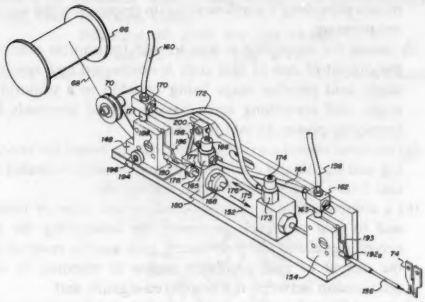
AUTOMATED WIRING APPARATUS

Evan J. Evans, Longview, Tex., assignor to United Wiring & Manufacturing Co., Longview, Tex.

Filed Mar. 9, 1978, Ser. No. 884,376
Int. Cl.[3] B23K *1/12, 3/02, 3/06;* **B65H** *17/36*
U.S. Cl. 219—56.1 **4 Claims**

1. Apparatus for soldering an electrical wire at a connection to a terminal, comprising:
means for dispensing solder to the terminal, and
an electrical heating element for melting the solder dispensed at the terminal by said means for dispensing, said electrical heating element including:
an electrically resistive plate,
a first slot extending along a substantial portion of the length of said plate essentially dividing said plate into two parts,
a connecting bridge joining together the ends of said two

parts and having a lesser thickness than that of said two parts, and



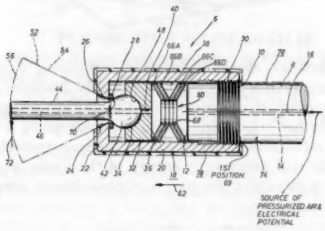
a pair of extension members joined to one of said parts, essentially parallel to said first slot and thermally decoupled from said connecting bridge.

4,268,740

FLEX HEAD WELDING TORCH HAVING DISC SPRING BIASING ELEMENTS

Harold D. Sanders, Houston, Tex., assignor to Central Welding Supply Co., Inc., South Houston, Tex.

Filed Feb. 23, 1979, Ser. No. 14,480
Int. Cl.³ B23K *9/16*
U.S. Cl. 219—137.51 **8 Claims**



1. In a welding torch body adapted for interconnection at one end with a source of pressurized gas and a source of electrical potential and at the other end with a welding torch head, said body including a first conduit for passage of the gas therethrough and means for passing electric current therethrough, the improvement wherein said body comprises in combination:

a ball having an elongated stem thereon for interconnection with the welding torch head, said ball and stem including a second conduit for passage of the gas therethrough;

means for retaining the ball with respect to the body; and

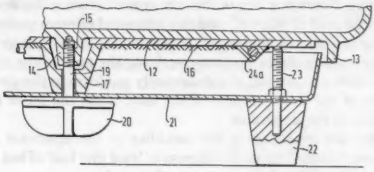
biasing means acting on the ball to maintain the stem in any angular orientation with respect to the axis of the body to which the stem is displaced, said biasing means including a disc spring disposed in the body, said disc spring defining an aperture communicating between said first conduit and said second conduit for passage of the gas therethrough.

4,268,741

ELECTRIC FRY PAN

William J. O'Brien, Vaucluse, Australia, assignor to Breville Holdings Pty. Limited, Pyrmont, Australia

Filed Jul. 27, 1979, Ser. No. 61,310
Int. Cl.³ F27D *11/02*
U.S. Cl. 219—439 **6 Claims**



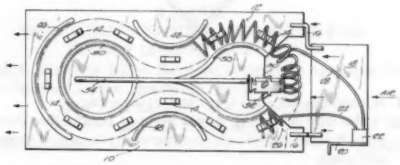
1. An electric fry pan, comprising an electric heating element connectable with an electric source and having a predetermined configuration; a heat distributing element constituted of aluminum and being in contact with said heating element so as to be heated by the latter; and a pan having an underside with a major portion which is in contact with said heat distributing element so that heat is transmitted from the latter to and distributed over said pan, means for securing said aluminum heat distributing element to said underside of said pan, said electric heating element being secured to said heat distributing element, said electric heating element being electrically insulated from said heat distributing element and said pan, and electric connecting means arranged to connect said electric heating element with the electric source and being electrically insulated from said heat distributing element and said pan, said pan having a bottom wall and side walls constituted of cast iron having high heat capacity and low thermal conductivity, so as to provide for a large heat reservoir ensuring good culinary properties and at the same time to avoid a localization of heat in said pan in the regions corresponding to the configuration of said electric heating element.

4,268,742

RESISTANCE HEATER ASSEMBLY

Merlyn F. Cottrell, Winneconne; Dale J. Gauthier, Omro, and Lester C. Miller, Sussex, all of Wis., assignors to E. R. Wagner Manufacturing Company, Milwaukee, Wis.

Filed Oct. 17, 1979, Ser. No. 85,758
Int. Cl.³ H05B *3/06*
U.S. Cl. 219—532 **9 Claims**



1. A heater assembly for installation in a duct comprising,

a metallic radiation panel,

electrical insulating support members projecting from both sides of the panel,

an electric resistance heating wire passing from one side of the panel to the other side of panel and supported on said members on both sides of the panel whereby air flowing along both sides of the panel is heated by the wire and by the panel which is radiantly heated by the wire,

said panel being dimensioned so the wire on each side of the panel lies within the perimeter of the panel and radiantly heats the panel and cannot radiantly heat the wire on the other side of the panel.

4,268,743

COUNTING-DOWN COUNTER

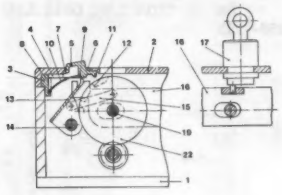
Horst Pfeiffer, Aldingen, Fed. Rep. of Germany, assignor to J. Hengstler K.G., Aldingen, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,354

Claims priority, application Fed. Rep. of Germany, Jun. 22, 1978, 2827315

Int. Cl.³ G06F *15/18*; G06C *25/00*

U.S. Cl. 235—130 R **11 Claims**



1. Counting-down counter comprising, in combination

at least one presetting digit wheel consisting of a rotatably mounted digit-carrying wheel part, a rotatably mounted resetting wheel part, and non-positive two-way coupling means connecting said digit-carrying wheel part and said resetting wheel part for joint rotation,

a rotatably mounted resetting shaft,

lost-motion one-way coupling means adapted to connect said resetting shaft and said resetting wheel part for joint rotation only in one sense and only when said resetting shaft and said resetting wheel part are in a predetermined rotational position relative to each other,

detent means for holding said resetting shaft against rotation in a predetermined rotational position thereof, and

locking key means which are manually operable for performing a short pivotal stroke so as to hold said digit-carrying wheel part against rotation during a presetting operation, while said resetting wheel part is rotated by said resetting shaft, until the latter has reached a click-stop.

4,268,744

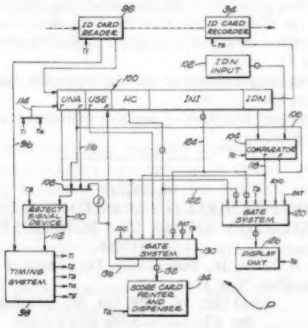
SCORE PROCESSING SYSTEM FOR USE WITH ID CARDS

Thomas C. McGeary, 2412 Palos Verdes Dr. W., Palos Verdes Estates, Calif. 90274

Filed Dec. 5, 1979, Ser. No. 100,572

Int. Cl.³ G06F *15/20, 7/02*; G06K *19/06*

U.S. Cl. 235—375 **7 Claims**



1. A control system for scoring, as in golf, for operation with a card or the like, bearing a record medium comprising:

means for sensing said record medium to provide signals from a specific card identified with a specific person and representative of a scoring composite for that person;

a controlled access input panel for forming signals representative of a current score by said specific person;

computer means for receiving said signals representative of a current score and said signals representative of said scoring composite to compute a fresh scoring composite;

means for recording said signals on said card, updated to include said current score; and

means for regulating the operation of said means for recording to verify recording for said specific person on said specific card.

4,268,745

TRACKING SERVO DRAWING DEVICE IN OPTICAL TYPE INFORMATION READING DEVICE

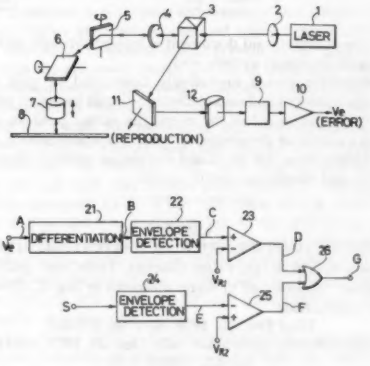
Takashi Okano, Tokorozawa, Japan, assignor to Universal Pioneer Corporation, Tokyo, Japan

Filed Aug. 8, 1979, Ser. No. 64,704

Claims priority, application Japan, Sep. 9, 1978, 53/111086

Int. Cl.³ G01J *1/36*

U.S. Cl. 369—44 **7 Claims**



1. In a tracking servo drawing device in an optical type informaton reading device having tracking servo means for allowing an irradiation light beam to track a recorded track on an information record surface to read information by using said irradiation light beam to illuminate said record surface, the improvement comprising; speed detection means for detecting a relative speed of said record track and said irradiation light beam at which the irradiation light beam goes across the video track, and when said relative speed is lower than a predetermined value; producing a first detection signal; signal level detection means in which the reproduction signal level of said information is detected, and when said reproduction level reaches a predetermined value, a second detection signal is produced; and, means responsive to the simultaneous generation of said first and second detection signals to generate an instruction signal to close the servo loop of said tracking servo means.

4,268,746

DOCUMENT FEED JAM DETECTOR FOR A DOCUMENT READING APPARATUS

Dale W. Schroeder, Iowa City, Iowa, assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 25, 1979, Ser. No. 88,305

Int. Cl.³ B65H *7/00*

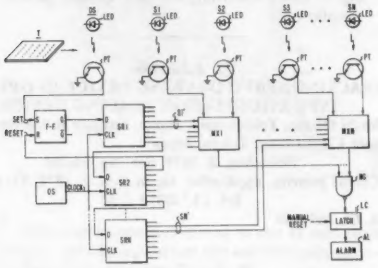
U.S. Cl. 250—223 R **5 Claims**

1. Apparatus for monitoring the position of a document in a document transport system, comprising:

a plurality of document sensor means positioned in a spaced apart relationship along the path of travel of a document

in a document transport system including a document entry sensor for generating a signal indicative of the entry of a document in said transport system;

an electronic circuit means for generating a series of logic outputs corresponding in number to the equivalent length of said document, said electronic circuit means advancing said group of logic outputs at a rate corresponding to the



rate at which said document is moved through said document transport system; and

comparator means operatively connected to said spaced apart sensors and said electronic circuit means to generate an output signal in the event the actual position of said document as monitored by said document sensor means differs from the simulated document position developed by said electronic circuit means.

4,268,747

POSITION TRANSDUCER FOR A ROTATING MEMBER

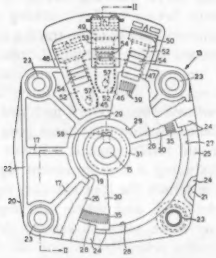
Raffaele Becchi, Ivrea; Felice Giacone, Turin, and Andrea Accattino, Salerano, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Italy

Filed Dec. 26, 1978, Ser. No. 973,011

Claims priority, application Italy, Dec. 30, 1977, 69951 A/77

Int. Cl.[3] **G01D** *5/34*

U.S. Cl. 250—231 SE **7 Claims**



1. An optical transducer for detecting the angular position of a rotating shaft with respect to a fixed part comprising:

a unit comprising a substantially closed body having a transverse cavity and a central through hole which crosses said cavity for lodging with ample clearance said rotating shaft, a disc provided with a plurality of radial openings lodged with ample clearance inside said transverse cavity, and light generating and detecting means mounted inside said closed body for detecting the passage of said radial openings and generating corresponding electrical signals, and

means for mounting said unit in cooperative relation to said shaft and said fixed part, said means comprising first means for axially positioning said disc with respect to said rotating shaft, second means for centering said body with respect to said rotating shaft, and third means for fixing said body to said part in its centered position.

4,268,748

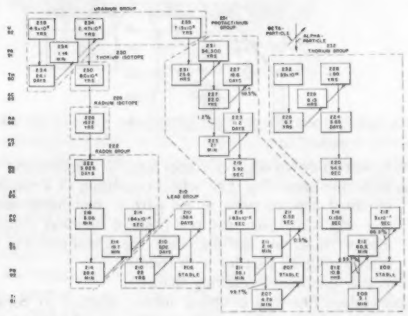
FIELD METHOD FOR DETECTING DEPOSITS CONTAINING URANIUM OR THORIUM

Lorin R. Stieff, P.O. Box 263, Kensington, Md. 20795

Continuation-in-part of Ser. No. 879,578, Feb. 21, 1978. This application Apr. 25, 1978, Ser. No. 899,937

Int. Cl.[2] **G01V** *5/00;* **G01T** *5/00*

U.S. Cl. 250—255 **6 Claims**



1. A field method for detecting location of a deposit containing uranium and for distinguishing between uranium or thorium containing deposits having characteristic radioactive daughter products near the deposit comprising

collecting subsurface samples from a vicinity of the deposit,

studying the samples for characteristic radioactive daughter products which are a mixture of Pb214, Bi214, Po214, Pb210 and Po210 detected by the alpha decay of Po214 and Po210 respectively in samples collected in the vicinity of a deposit containing U238, and wherein

chemically extracting Pb, Bi and Po in a solution from the samples,

exposing first and second alpha sensitive films to Po from the solution,

exposing the first film to record decay of Po214,

exposing the second film to record decay of Po210,

etching the films to reveal the high energy alpha particle damage,

studying the first film for Po214 alpha damage,

studying the second film for Po210 alpha damage, and

detecting presence of the deposit containing uranium based on the alpha particle damage in the films caused by characteristic radioactive daughter product matter in the samples,

plotting sample locations and alpha particle damage populations, and

determining locations of deposits containing uranium from the plotting.

4,268,749

METHOD FOR DIRECTLY MONITORING THE OUTPUT OF A NEUTRON SOURCE IN A BOREHOLE LOGGING SYSTEM

William R. Mills, Jr., Duncanville, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 16, 1978, Ser. No. 951,696

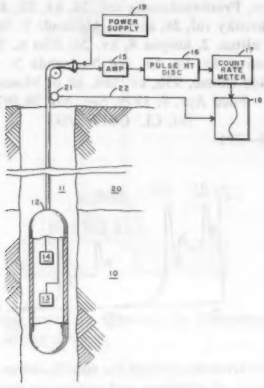
Int. Cl.[3] **G01V** *5/00;* **G01T** *3/00*

U.S. Cl. 250—269 **11 Claims**

1. A system for directly monitoring the output of a fast neutron source in a borehole logging tool, comprising:

(a) a neutron detector that interacts differently with fast neutrons directly from a neutron source and with epithermal or thermal neutrons returning to the borehole from

irradiated formations surrounding the borehole, said detector producing a composite signal of pulses having a spectrum of differing pulse height characteristics attributable to said differing interactions, and



(b) means for distinguishing between said differing pulse height characteristics to identify that portion of said composite signal attributable to the fast neutrons received by said detector directly from said source.

4,268,750

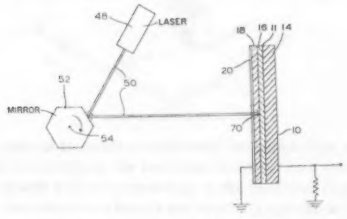
REALTIME RADIATION EXPOSURE MONITOR AND CONTROL APPARATUS

Ronald W. Cowart, Houston, Tex., assignor to The University of Texas System, Austin, Tex.

Division of Ser. No. 22,989, Mar. 22, 1979. This application May 14, 1979, Ser. No. 38,466

Int. Cl.[1] G03G *13/00*; G03B *5/17*; H04N *5/32*

U.S. Cl. 250—315.1 **4 Claims**



1. An exposure measuring apparatus comprising:

a multilayered detector structure, in an electric potential field, said detector comprising a duo-dielectric sandwich including, a transparent conducting layer overlying a transparent insulating layer which overlays a high resistance photoconductor layer which overlays a conductive layer;

an external circuit connecting said transparent conducting layer and said conducting layer;

measuring means responsive to the flow of current in said external circuit for measuring the flow of current in said external circuit when said duo-dielectric detector structure is irradiated by radiation capable of forming electron hole pairs in the photoconductive layer of said multilayered detector structure.

4,268,751

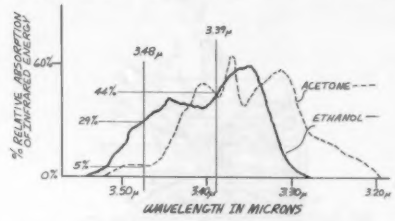
INFRARED BREATH ANALYZER

Jack D. Fritzlen, Vail; Fred M. Thul, Avon, and Douglas R. Vogel, Vail, all of Colo., assignors to CMI Incorporated, Minturn, Colo.

Filed Apr. 2, 1979, Ser. No. 25,904

Int. Cl.[1] G01J *1/00*

U.S. Cl. 250—343 **22 Claims**



1. An apparatus to determine the presence, in a sample, of an unknown energy absorbing compound when a predetermined energy absorbing compound is also present in the sample and where both the unknown energy absorbing compound and the predetermined energy absorbing compound both absorb first and second predetermined wavelengths of energy, comprising:

generating means for producing said first predetermined wavelength of energy and said second predetermined wavelength of energy, both said first predetermined wavelength and said second predetermined wavelength being absorbed by both the unknown energy absorbing compound and the predetermined energy absorbing compound when both compounds are present in the sample;

chamber means in the path of said first and second predetermined wavelengths of energy for receiving the sample and for passing said first and second predetermined wavelengths therethrough;

detecting means in the path of said first and second predetermined wavelengths for sensing separately the amount of energy remaining in each of said first and second predetermined wavelengths after the passing of said first and second predetermined wavelengths through said chamber means; and

comparing means connected to said detecting means for comparing the amount of energy remaining in said first predetermined wavelength with the amount of energy remaining in said second predetermined wavelength, said comparing means outputting a comparison value, the comparison value being known and unique for the predetermined energy absorbing compound so that, if the comparison value outputted is different than the known and unique comparison value for the predetermined energy absorbing compound, an unknown energy absorbing compound is present in said chamber means.

4,268,752

OPTICAL ARRANGEMENT FOR A PASSIVE INFRARED MOTION DETECTOR

Thomas Herwig, Eltville, and Gerhard Doenges, Taunusstein, both of Fed. Rep. of Germany, assignors to Heimann GmbH, Fed. Rep. of Germany

Filed May 21, 1979, Ser. No. 40,652

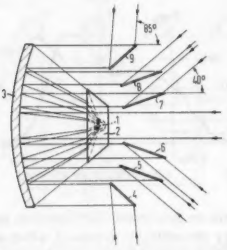
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904654

Int. Cl.[1] G01J *1/00*

U.S. Cl. 250—353 **8 Claims**

1. In a passive infrared motion detector having an infrared detector unit and means for directing infrared radiation from at least two separate directions to be monitored on said detector unit, the improvements comprising the means for directing including a single means for focusing radiation from more than

two directions simultaneously and more than two separate, flat reflecting surfaces, said single means for focusing radiation including a single concave mirror having an optical axis and a deflecting mirror being arranged on the optical axis of the concave mirror and at an angle therein to deflect light focused by the concave mirror at an approximately a right angle to the optical axis and onto the infrared detector unit so that the focused radiation from said concave mirror travels to the detector unit in a folded path with two portions extending



substantial at right angles to each other, said flat reflecting surfaces being a plurality of individual separate flat reflecting surfaces with at least one being arranged on each side of the optical axis of the concave mirror, said reflecting surfaces being arranged with at least one reflecting surface associated with each direction to be monitored to reflect the radiation simultaneously from said direction onto said concave mirror with at least two of the reflecting surfaces having planes extending at different angles to the optical axis.

4,268,753

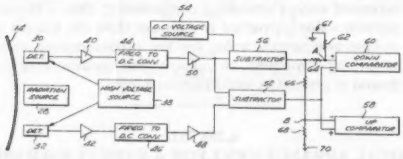
LEVEL DETECTION DEVICE FOR ENCLOSED TANKS

Eugene T. Murakami, Diamond Bar, and Thomas A. Gray, Anaheim, both of Calif., assignors to Thomas Gray & Associates, Inc., Division Level Link, Orange, Calif.

Filed Sep. 13, 1979, Ser. No. 75,014

Int. Cl.³ G01F *23/00*

U.S. Cl. 250—357 **15 Claims**



1. A level detection device for measuring the level of material within an enclosed tank, comprising:

a radiation source mounted on the exterior wall of said tank for emitting radiation into said tank;

an upper radiation detector located above said source;

a lower radiation detector located below said source, both said detectors producing electrical signals in response to back-scattered radiation;

means for comparing said electrical signals to yield an output signal; and

means responsive to said output signal for determining said level of materiai.

4,268,754

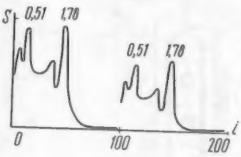
RADIOACTIVATION METHOD FOR SIMULTANEOUS DETERMINATION OF NITROGEN, PHOSPHORUS AND POTASSIUM CONTENT IN PLANTS AND FERTILIZERS

Rigo A. Srapeniants, B. Pereyaslavskaya ulitsa, 15, kv. 140; Igor B. Saveliev, Preobrazhensky val, 24, kv. 76; Jury L. Kovtun, Preobrazhensky val, 24, kv. 70; Alexandr V. Sidorov, Velozavodskaya ulitsa, 2, korpus 4, kv. 26; Kim S. Tsagolov, ulitsa Gostinichnava, 9v, kv. 13, and Nadezhda N. Miroshnikova, Altufievskoe shosse, 95b, kv. 164, all of Moscow, U.S.S.R.

Filed Apr. 9, 1979, Ser. No. 28,397

Int. Cl.³ G01T *3/00*

U.S. Cl. 250—391 **1 Claim**



1. A radioactivation method for simultaneous determination of the nitrogen, phosphorus and potassium content in plants and fertilizers which also contain isotopes which interfere with gamma radiation analysis, said isotopes having a specific half-life, which comprises exposing samples to be analyzed and standard samples to neutron irradiation to induce gamma radiation which is plotted as a spectrum of gamma radiation energy in proportion to number of pulses of the neutron irradiation, recording the spectra of gamma radiation induced in said samples, setting said samples aside for a period of time corresponding to the half-life of the interfering isotope, again exposing said samples being analyzed and said standard samples to neutron irradiation and recording the resulting spectra of gamma radiation, superposing the first and second spectra of the samples being analyzed and standard samples and shifting the same relative to each other along the energy axis, and comparing the spectra of the samples being analyzed and the standard samples to determine the content of the elements being analyzed.

4,268,755

FUEL ASSEMBLY SHIPPING CASK

Robert Weber, Uttenreuth; Stefan Ring, and Ulf Heeschen, both of Erlangen, all of Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Jul. 9, 1979, Ser. No. 55,918

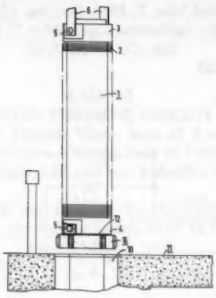
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1978, 2830305

Int. Cl.³ G21F *5/00*

U.S. Cl. 250—506 **8 Claims**

1. In combination, a fuel assembly transfer cask having lifting devices and a shock-absorbing piston member associated with the underside of the transfer cask, the piston member

comprising two mutually spaced-apart metal plates, a multiplicity of hollow metal bodies stacked on top of one another



therebetween and fastening elements for fastening the piston member to the lifting devices.

4,268,756

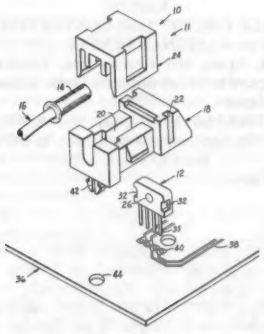
OPTICAL TRANSCEIVER

Ronald J. Crouse, Mckinney, and Edward C. Wade, Carrollton, both of Tex., assignors to TRW Inc., Los Angeles, Calif.

Filed Nov. 13, 1978, Ser. No. 959,787

Int. Cl.[3] **G02B** *27/00*

U.S. Cl. 250—551 **15 Claims**



1. An optical transceiver to be used in conjunction with at least one power supply for receiving electrical data and transmitting optical data corresponding to the electrical data to an optics communication channel and receiving optical data from the optics communication channel and transmitting electrical data corresponding to the optical data comprising, in combination:

(a) a light sensing device including a light sensor and means responsive to the light sensor for transmitting electrical data;

(b) a light emitting device including a light emitter for emitting light when supplied wiht sufficient electric current and means responsive to the received electrical data for supplying the light emitter with sufficient electric current; and

(c) a mounting surface, wherein said light sensor and said light emitter are mounted on said mounting surface facing substantially the same direction and said light sensor substantially encircles said light emitter as viewed from a direction substantially perpendicular to said mounting surface.

4,268,757

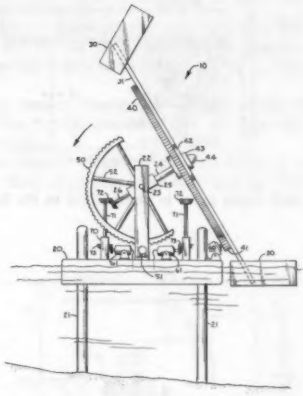
WATER WHEEL ELECTRIC GENERATION DEVICE

Edward R. Rogers, 69 Prescott Ave., Chelsea, Mass. 02150

Filed Nov. 16, 1979, Ser. No. 94,960

Int. Cl.[3] **F03B** *13/12*

U.S. Cl. 290—53 **3 Claims**



1. A water power electric generating device comprising:

(a) a buoyant platform

(b) a plurality of pylons, fixedly mounted in the ocean or river-bed, slidingly engaging said buoyant platform;

(c) tower means fixedly mounted to said buoyant platform and upwardly extending therefrom;

(d) axle means rotatable about an axis and pivotedly adapted to said tower means;

(e) means to rotate said axle means in an arc of substantially 120° connecting on one end to said tower means and on the other end to said axle means;

(f) first gear means fixedly mounted to said axle means;

(g) a plurality of radially and outwardly directed paddle arms fixedly mounted to said first gear means and formed at the outward end thereof into a paddle to engage the moving water and rotate said first gear means;

(h) pinion gear means toothedly engaging said first gear means and rotated thereby;

(i) generator means adapted to said pinion gear means and activated thereby to produce electricity.

4,268,758

ARRANGEMENT FOR SUPPRESSING HIGH FREQUENCY CURRENTS IN BEARINGS OF SHAFTS

Hans-Christian Grassmann, Igelsdorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 891,895, Mar. 30, 1978. This application Aug. 27, 1979, Ser. No. 69,993

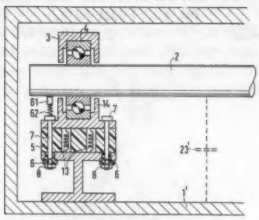
Claims priority, application Fed. Rep. of Germany, Sep. 8, 1978, 2839246

Int. Cl.[3] **H03H** *1/00*

U.S. Cl. 307—105 **4 Claims**

1. An arrangement for suppressing high frequency currents in bearings of shafts in high frequency treating apparatus with operating frequencies above 10 kHz, the bearing being mechanically connected to the housing of the treatment apparatus, said bearing being disposed in a housing and exhibiting a capacitive impedance between the shaft and its housing, the bearing shaft exhibiting an inductive impedance at said frequencies and there being a capacitive impedance between the shaft and the housing which is high compared to the bearing capacitive impedance, said arrangement comprising a further impedance connected in series with the bearing impedance

between the bearing housing and the housing of the treatment chamber, the sum of said further impedance and the impedance



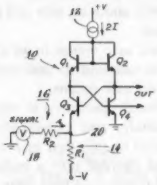
of said shaft being great in comparison to the bearing impedance.

4,268,759

SIGNAL-PROCESSING CIRCUITRY WITH INTRINSIC TEMPERATURE INSENSITIVITY

Barrie Gilbert, Forest Grove, Oreg., assignor to Analog Devices, Incorporated, Norwood, Mass.

Filed May 21, 1979, Ser. No. 40,594
Int. Cl.[3] G06G *7/12, 7/20*
U.S. Cl. 307—490 **16 Claims**



1. A signal-processing device incorporating a translinear circuit comprising:

first and second matched PN junctions with input and output terminals;

first current means supplying current to said junction input terminals;

first and second matched transistors;

the output terminal of said first junction being connected to the collector of said first transistor to supply the current of the first junction thereto;

the output terminal of said second junction being connected to the collector of said second transistor to supply the current of the second junction thereto;

means coupling the collector of said first transistor to the base of said second transistor;

means coupling the collector of said second transistor to the base of said first transistor;

means for fixing the emitter of said second transistor at a reference potential;

an input circuit comprising means to supply to said first transistor emitter an input current corresponding to an input signal; and

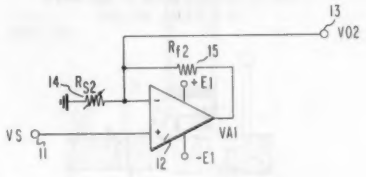
second current means connected to said first transistor emitter to establish the net emitter current as the transistor quiescent current plus (or minus) the input current from said input circuit.

4,268,760

AMPLITUDE-LIMITER

Tadatsugu Tokunaga, and Akira Fujii, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 17,991
Claims priority, application Japan, Mar. 7, 1978, 53-29514[U]
Int. Cl.[3] H03K *5/02*
U.S. Cl. 307—562 **6 Claims**



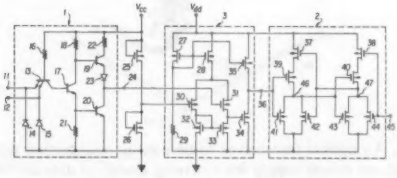
1. An amplitude-limiting circuit comprising: an operational amplifier having an inverted input terminal, a non-inverted input terminal and a voltage input means connected to sources of positive and negative operating voltages; a first resistor having one terminal grounded and the other terminal connected to said inverted input terminal; a second feedback resistor for feeding back the output of said operational amplifier to said inverted input terminal; a first means for feeding an input signal to said non-inverted input terminal, and a second means for deriving an output signal from said inverted input terminal.

4,268,761

INTERFACE CIRCUIT FOR CONVERTING LOGIC SIGNAL LEVELS

Yasoji Suzuki, Ayase, and Tetsuya Iida, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 1, 1979, Ser. No. 16,565
Claims priority, application Japan, Mar. 1, 1978, 53-22999
Int. Cl.[3] H03L *5/00*
U.S. Cl. 307—264 **6 Claims**



1. An interface circuit comprising:

an input terminal for supplying a first logic signal from a first logic circuit producing said first logic signal;

means for producing an intermediate reference voltage between a high level and a low level of said first logic signal;

means for comparing said first logic signal with said intermediate reference voltage to produce a second logic signal which has levels different from said first logic signal;

an output terminal for outputting the second logic signal to a second logic circuit producing a third logic signal which has levels different from said first logic signal, and

wherein said means for comparing includes a comparator for comparing said first logic signal with said reference voltage and a linear amplifier comprising a first MOSFET whose gate is connected to the output terminal of said comparator and a second MOSFET whose channel type is a channel type different from that of said first MOSFET and which is connected to said first MOSFET in series for

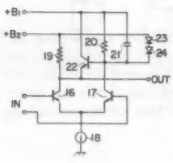
amplifying the output signal from said comparator and producing said second logic signal.

4,268,762

PULSE FORMING CIRCUIT

Masanori Ienaka; Takeshi Wada, both of Kodaira; Yukihiko Miyamoto, and Tsuneo Yamada, both of Tokyo, all of Japan, assignors to Hitachi, Ltd. and Trio Kabushiki Kaisha, both of, Japan

Filed Jan. 16, 1979, Ser. No. 3,911
Claims priority, application Japan, Mar. 15, 1978, 53/28660
Int. Cl.[3] H03K 5/08
U.S. Cl. 307—268 5 Claims



1. A pulse forming circuit for the wave conversion of a pulse signal, comprising:

first and second transistors which have their emitters coupled in common with each other into an arrangement of a differential form, at least one of respective bases of said first and second transistors receiving the pulse signal;

load means connected to a collector of said first transistor;

a time constant circuit which is connected to a collector of said second transistor;

power supply means for feeding to said load means and said time constant circuit;

a clamp circuit which clamps a collector potential of said second transistor in a conductive state thereof and which is coupled to said collector of said second transistor;

a third transistor which has an emitter connected to said collector of said first transistor, a base connected to said collector of said second transistor and a collector connected to said power supply means; and

an output terminal which is connected to said collector of said first transistor and which serves to drive an output signal.

4,268,763

CONDITIONING CIRCUIT FOR USE WITH I^2L AND ISL LOGIC ARRAYS EMBODYING TWO POWER SUPPLIES

Stephen C. Johnson, Redwood City, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Apr. 5, 1979, Ser. No. 27,434
Int. Cl.[3] H03K 3/01, 5/13
U.S. Cl. 307—605 7 Claims

1. A power-on conditioning circuit for logic circuitry comprising:

(a) a reference terminal and first and second power supply terminals for supplying two independent supply voltages of differing magnitude to logic circuitry when said first power supply terminal and said reference terminal are connected across a voltage source;

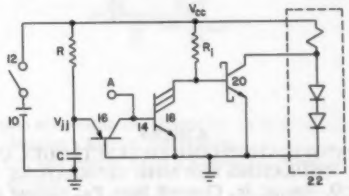
(b) a capacitor connected between said reference terminal and said second power supply terminal;

(c) a resistor connected between said first and second power supply terminals;

(d) a first bipolar transistor gate operative at a first supply voltage and having an input electrode coupled to said second power supply terminal and having an output electrode;

(e) a biasing element coupled between the output electrode of said first bipolar transistor gate and said first power supply terminal;

(f) a second bipolar transistor gate operative at a second supply voltage of greater magnitude than said first supply



voltage and having an input electrode coupled to said biasing element and to the output electrode of said first bipolar transistor gate and having an output electrode;

(g) said first and second bipolar transistor gates being so interconnected with said resistor and capacitor that said second gate receives its supply voltage and reaches its conducting state earlier in time than said first gate, said resistor and capacitor forming a charging circuit that delays the application of the full amount of the first supply voltage to said first gate until after said second gate reaches conducting state, thereby producing a delay time before said first gate conducts and causes said second gate to turn off; and

(h) additional logic circuit means coupled to the output electrode of said second bipolar transistor gate for receiving an initial conditioning signal from said second gate when said second gate turns off.

4,268,764

ZERO CROSSOVER DETECTOR

Kim Eckert, Austin, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

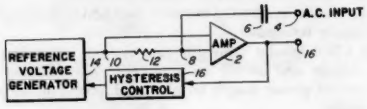
Filed May 1, 1979, Ser. No. 35,040
Int. Cl.[3] H03K 5/153, 3/295
U.S. Cl. 307—354 26 Claims

1. An A.C. zero crossover detection circuit including hysteresis, comprising:

first means for generating a reference voltage;

comparing means having a first input coupled to said reference voltage and a second input coupled to an A.C. signal for detecting the crossover points thereof, said comparing means having an output indicative of said crossover points; and

second means coupled to said comparing means and to said generating means for automatically altering the amount of



said hysteresis to compensate for phase shift in said A.C. signal at each of said crossover points.

4,268,765

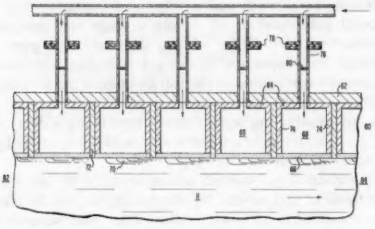
TRANSPIRATION COOLED ELECTRODES AND INSULATORS FOR MHD GENERATORS

Delmer Q. Hoover, Jr., Churchill Boro, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 28, 1979, Ser. No. 16,266

Int. Cl.³ H02N 4/02

U.S. Cl. 310—11 **11 Claims**



1. An MHD generation system comprising:
(a) a combustor;
(b) means for providing an oxidant to said combustor;
(c) means for providing a fuel to said combustor;
(d) means for providing a seed material to said combustor;
(e) a duct for transporting combustion products, selected portions of said duct being formed of electrodes having an enclosed interior compartment and a front transpiration surface one side of which is adjacent said combustion products and another side of which is adjacent said enclosed interior; and
(f) means for conducting a selected gas to said enclosed interior of said electrode and through said transpiration surface into said duct.

4,268,766

Patent Not Issued For This Number

4,268,767

ELECTRICAL MACHINE WITH AN AXIAL-FLOW FAN

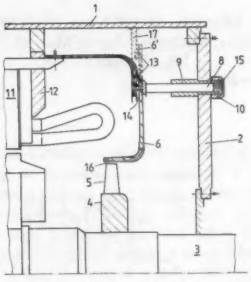
Josip Domitrovic, Birr, and Urban Ulrich, Fislisbach, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed May 25, 1979, Ser. No. 42,617

Claims priority, application Switzerland, Jun. 9, 1978, 6311/78

Int. Cl.³ H02K 9/00

U.S. Cl. 310—53 **12 Claims**



1. An electrical machine having an axial-flow fan mounted on a rotor shaft within a machine casing comprising:
an axial-flow fan blade included on the axial-flow fan;
a bearing bracket associated with the rotor shaft and fixedly connected to the machine casing;
a first encasing part for the axial-flow fan, said first encasing part being axially moveable relative to said fan blade from a first axial position adjacent to said fan blade to a second axial position axially spaced from said fan blade, and said first encasing part being moveably mounted on said bearing bracket;
a second encasing part for the axial-flow fan, said second encasing part being fixedly connected to said machine casing;
means for sealing said first encasing part to said second encasing part when said first encasing part is in said first axial position; and
means for axially moving said first encasing part from said first axial position to said second axial position.

4,268,768

OFFICE MACHINE WITH AN ELECTRIC DRIVE MOTOR

Ulrich Beckord, and Helmut Eder, both of Lengfeld, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Continuation of Ser. No. 832,823, Sep. 13, 1977, abandoned. This application Mar. 22, 1979, Ser. No. 22,851

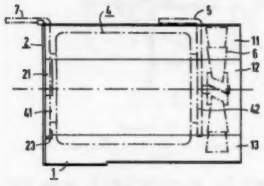
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1976, 7630630[U]

Int. Cl.³ H02K 9/06

U.S. Cl. 310—62 **3 Claims**

1. In an office machine with an electric drive motor for driving the office machine which is arranged in a machine well

and on the one shaft end of which an axial blower wheel is fastened which blows out a stream of cooling air from a machine well opening provided in the vicinity of the one motor end, the improvement comprising the blower being in the form of an external blower wheel disposed at the other end of the motor, outside the end of the motor, and an air duct housing



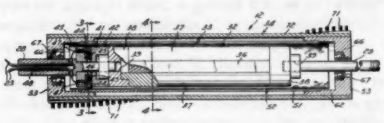
surrounding the axial blower wheel and the motor in such a manner that the air stream is conducted over the motor toward the machine well opening to obtain forced surface ventilation, said air duct housing being formed in part by a portion of the machine well which partially encloses said electric drive motor.

4,268,769

MOTOR FOR ROTARY BRUSH

John R. Dorner; Jon F. Wiltse, and Roger E. Hollis, all of Watertown, N.Y., assignors to The Scott & Fetzer Company, Watertown, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,864
Int. Cl.³ H02K *7/00*
U.S. Cl. 310—67 R **13 Claims**



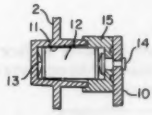
1. An electric motor comprising a hollow cylindrical armature, an elongated permanent magnet extending axially within said armature, said armature including a winding of electrical conductors extending generally lengthwise of said armature and soft magnetic material radially outside of the winding, means for supporting said winding and magnetic material of said armature for rotation about said permanent magnet, said magnetic material cooperating with said permanent magnet to develop a magnetic field passing through the zone in which said winding rotates, electrical brush means, means supporting said electrical brush means in fixed relation to said permanent magnet, and commutating means, connected to said conductors, on said armature for cooperation with said brush means, said brush means being in contact with said commutating means to establish current flow in said conductors, said winding being fixed to and radially supported by said soft magnetic material along a major portion of its axial length whereby heat developed therein is conducted outwardly to said soft magnetic material.

4,268,770

ALTERNATING CURRENT GENERATOR WITH RADIO NOISE SUPPRESSING CAPACITOR

Yoshiyuki Iwaki, and Katsuhiko Fujioka, both of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1979, Ser. No. 71,361
Claims priority, application Japan, Oct. 4, 1978, 53-136949[U]
Int. Cl.³ H02K *11/00*
U.S. Cl. 310—72 **3 Claims**



1. A radio noise surpressor device for use with an AC generator for charging a battery, comprising:

a bracket, said bracket being a portion of a housing of said AC generator;

a hollow socket located in a portion of said bracket, said socket incluuing an interior having a truncated conical-shaped inner surface;

an insulated cylindrical capacitor, said capacitor including a first terminal located at a first end and a second terminal located at second end, said capacitor being positioned in said socket, said first terminal being oriented towards the interior of said socket;

first conductor means positioned between said socket and said first terminal of said capacitor for electrically coupling said first terminal to said socket;

second conductor means positioned between said second terminal of said capacitor and an output terminal of said generator for electrically coupling said second terminal to said output terminal; and

water-proof packing means for mechanically retaining said capacitor in said socket and for preventing water from entering said socket, said packing means surrounding a portion of said capacitor and being located between said second conductor means and an exterior portion of said socket.

4,268,771

MAGNETIC PROBE

Melvin A. Lace, 3 Garden Ct., Prospect Heights, Ill. 60070

Continuation-in-part of Ser. No. 849,547, Nov. 4, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 965,939
Int. Cl.³ H02K *21/38*
U.S. Cl. 310—155 **10 Claims**

1. A magnetic probe for sensing the passage of a moving magnetic element, comprising:

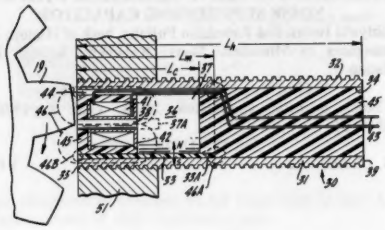
a cylindrical housing of high permeability material;

a radially magnetized cylindrical permanent magnet mounted co-axially within the housing and extending inwardly from one end of the housing in circumferential surface-to-surface contact with the housing throughout the length of the magnet;

a core of high permeability material mounted within and extending axially of the permanent magnet, the core including a small diameter pole piece extending axially inwardly from the one end of the housing and joined to a large diameter magnetic flux collector engaging the inte-

rior of the permanent magnet in circumferential surface-to-surface contact at a location spaced from the one end of the housing;

and an electrical sensor coil encompassing the pole piece;



all flux paths between the inner surface of the permanent magnet and the housing at the opposite ends of the magnet being high-reluctance paths.

4,268,772

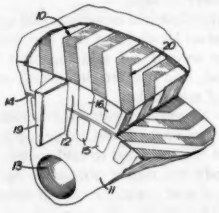
LAMINATED ROTOR WITH CAST END WINDINGS

John Workman, Greyabbey, Northern Ireland, assignor to S.B.W. Engineers Limited, Belfast, Northern Ireland

Division of Ser. No. 851,268, Nov. 14, 1977, Pat. No. 4,204,314. This application Aug. 28, 1979, Ser. No. 70,657

Int. Cl.³ H02K *17/16*

U.S. Cl. 310—197 **8 Claims**



1. An electromagnetic device having a core made of laminated material with a double-layer winding therein, wherein said core is composed of first and second sets of apertured laminations of which one set accommodates the conductors of one layer of said winding and the other set accommodates the condutors of the other layer of said winding, the conductors of said one layer being interconnected with the conductors of said other layer by cast in situ end windings located at the end faces of said core, and wherein each lamination set includes adjacent laminations which are mutually displaced from alignment, the arrangement being such that the end windings interconnect adjoining conductor ends.

4,268,773

SUPPORT FOR THE FIELD WINDING OF FIELD SPIDERS

Edwin Beck, Villnachern, and Arthur Stocker, Birr, both of Switzerland, assignors to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Jun. 8, 1979, Ser. No. 46,684

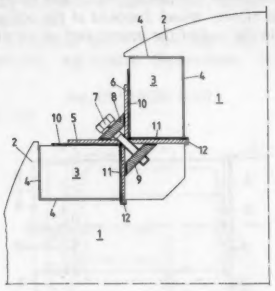
Claims priority, application Switzerland, Jun. 8, 1978, 6273/78

Int. Cl.³ H02K *1/24*

U.S. Cl. 310—269 **13 Claims**

1. A device for supporting a field winding of a field spider with salient poles, comprising:

a support member adapted to be received between field coils of two adjacent poles, the support member including first



and second flat portions which cross one another and which bear against free surfaces of the field coils.

4,268,774

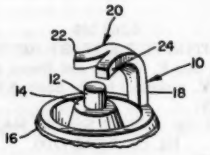
SPARK PLUG WITH GROUND ELECTRODE HAVING DIVERGING PRONGS

Maston Forkum, Jr., Rte. 10, Box 43, Blair La., Lebanon, Tenn. 37087

Continuation-in-part of Ser. No. 763,337, Jan. 28, 1977, abandoned, which is a continuation-in-part of Ser. No. 658,713, Feb. 17, 1976, abandoned, which is a continuation-in-part of Ser. No. 473,400, May 28, 1974, abandoned. This application Apr. 12, 1979, Ser. No. 29,542

Int. Cl.³ H01T *13/32*

U.S. Cl. 313—141 **9 Claims**

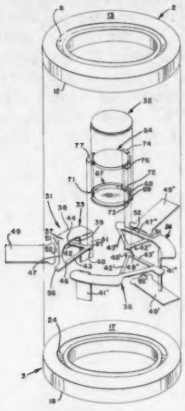


1. A spark plug for igniting the fuel charge in an internal combustion engine and having a metal housing, an insulator carried by said housing, an elongated center electrode peripherally surrounded by said insulator and having a free gap-delimiting end projecting axially beyond said insulator at one end of said housing, and a ground electrode extending from said housing at said one end thereof, said ground electrode having a gap-delimiting end portion extending radially with respect to the longitudinal axis of said center electrode at a region that is axially spaced from the free end of said center electrode to define a spark gap therewith, said end portion being split to form two angularly spaced apart non-parallel prongs terminating in free ends and being joined together remote from their free ends at a vertex region, said prongs diverging continuously away from each other throughout their entire lengths in a direction extending from said vertex region to their free ends to be non-parallel throughout their lengths, the angular spacing of said prongs being such that the longitudinal axis of said center electrode extends between said prongs, said vertex region lying between said longitudinal axis and the end of said end portion remote from the free ends of said prongs, and said vertex region further lying at or sufficiently close to the peripheral limit of said center electrode at such a location relative to said center electrode that an electrical spark bridging said gap impinges initially at said vertex region and then splits to travel simultaneously along both of said prongs.

4,268,775
CATHODE-HEATER ASSEMBLY AND SUPPORT STRUCTURE THEREFOR

Anthony J. Barraco, 2300 - E Zanker, San Jose, Calif. 95131, and Albert M. Rockwell, Belmont, Calif., assignors to Anthony J. Barraco, San Jose, Calif.

Filed Mar. 13, 1978, Ser. No. 885,636
Int. Cl.[2] H01J 1/20, 19/14
U.S. Cl. 313—337 36 Claims



1. In combination, a cathode-heater assembly and support structure therefor, comprising:

(a) a pair of dielectric mounting rings arranged in end-to-end relation and bonded to one another;

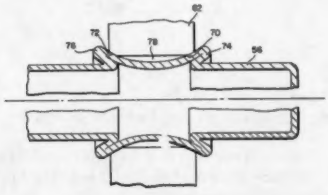
(b) means anchored between opposed ends of said mounting rings and including a plurality of approximately equilateral triangled support structures each having an apex end and a base end; and

(c) a cathode-heater assembly having at least two electrically conductive radially outwardly extending heater leads, said assembly being fixed on the apex ends of said triangled support structures by means of said heater leads.

4,268,776
CATHODE CUP HAVING SUPPORT FLANGES SLOPED SYMMETRICALLY IN OPPOSING AXIAL DIRECTIONS

Raymond C. Morrison, Scituate, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Feb. 16, 1979, Ser. No. 12,773
Int. Cl.[3] H01J 29/04, 29/48
U.S. Cl. 313—446 6 Claims



1. An electron discharge device comprising:

an envelope;

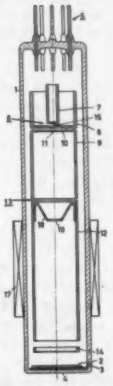
electrode means disposed within the envelope for producing a flow of electrons therein and including a cylindrical cathode having an axially extended outer surface provided with an outwardly extended pair of opposing mutually divergent flanges to form respective opposing sloped wall portions of an interposed channel, each flange being sloped axially at a respective acute angle of inclination relative to the surface; and

support means spaced outwardly from the axially extended outer surface of the cathode and including a ring-shaped dielectric member having an inner peripheral portion extended radially into the channel and provided with opposing bevelled surfaces which are disposed in slidable contacting engagement with the respective flanges for insulatingly supporting the cathode in a predetermined position within the envelope.

4,268,777
CATHODE-RAY TUBE

Johannes H. T. van Roosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 29, 1979, Ser. No. 70,552
Claims priority, application Netherlands, Sep. 14, 1978, 7809345
Int. Cl.[3] H01J 29/48, 31/38
U.S. Cl. 315—1 6 Claims



1. A cathode-ray tube comprising:

an envelope;

a target;

an electron gun, centered along an axis in the envelope, comprising a cathode and an anode, said electron gun the target, said anode being elongated and having a small aperture to limit the electron beam and having an end facing the target; and

a focussing lens, to focus the electron beam on the target, comprising at least two electrodes, the first electrode, viewed in the direction from the electron gun to the target, being the anode;

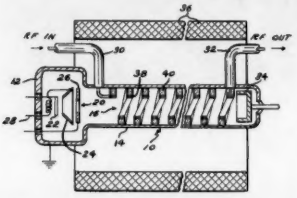
characterized in that the distance between the aperture in the anode and the end of the anode facing the target is at least 1.5 times the largest dimension of the anode taken in a cross-section perpendicular to the axis; and

in operation the potential applied to the anode is at most 75 volts positive with respect to the potential of the cathode.

4,268,778
TRAVELING WAVE DEVICE WITH UNIFIC SLOW WAVE STRUCTURE HAVING SEGMENTED DIELECTRIC SUPPORT

Walter Friz, Yellow Springs, Ohio, assignor to Louis E. Hay, Dayton, Ohio, a part interest

Filed Jun. 27, 1979, Ser. No. 52,340
Int. Cl.[3] H01J *25/34*
U.S. Cl. 315—3.5 **18 Claims**

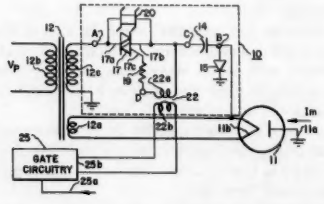


1. A traveling wave device comprising:
(a) a body member having a longitudinal tubular element;
(b) an elongated unific slow wave structure having a plurality of segmented dielectric supports in intimate contact within the tubular element of said body member, said slow wave structure comprising a metallic core having a maximum inside diameter of 0.3 cm and with predetermined electrical characteristics over a predetermined frequency range, and a plurality of segmented dielectric supports particulate deposition deposited to the peripheral surface of said metallic core to form said unific slow wave structure;
(c) means within said body member spaced from the first end of and coaxial with said slow wave structure for generating and projecting an electron beam through said slow wave structure;
(d) RF energy means joined to said slow wave structure, the electron beam interacting with and amplifying the RF energy flowing through said traveling wave device;
(e) magnetic means surrounding said body member for producing a magnetic field guiding the electron beam; and,
(f) collector means within said body member spaced from the second end of said slow wave structure for collecting the spent electron beam.

4,268,779
CIRCUIT FOR CONTROLLING CURRENT FLOW FROM AN A.C. SOURCE TO A LOAD

Charles W. Eichelberger; Rudolph A. Dehn, both of Schenectady; Michael Gdula, Albany, and Robert J. Wojnarowski, Clifton Park, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 13, 1979, Ser. No. 66,286
Int. Cl.[3] H05B *39/00, 41/14*
U.S. Cl. 315—105 **10 Claims**

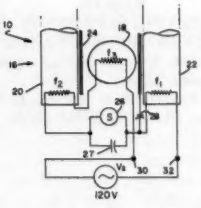


1. Apparatus for controlling the flow of current between an A.C. power source and a controllable load consuming appreciable amounts of power only if a minimum voltage applied thereto is exceeded, comprising:
at least one controllable switching device in series connection between said power source and said load, each of said controllable devices having first, second and control electrodes, each controllable device having substantial flow of current therethrough only if a gating signal of at least a minimum magnitude is applied to said control electrode with respect to one of said first and second electrodes;
a like number of non-linear resistance elements, each element being the only element in direct electrical parallel connection across one of said controllable switching devices;
each of said controllable devices having a predetermined hold-off voltage at which voltage, when applied between said first and second terminals, essentially no current flows through said controllable switching device unless said gating signal is present at said control electrode;
each said non-linear resistance element having a bidirectionally-symmetrical breakdown voltage substantially equal to, but not greater than, the hold-off voltage of the associated controllable switching device; and
means for providing said gating signal, at a frequency greater than the frequency of said source and of said predetermined magnitude, to each control electrode of each controllable switching device.

4,268,780
INTEGRATED FLUORESCENT-INCANDESCENT LAMP ASSEMBLY

William J. Roche, Merrimac, and Tadius T. Sadoski, Salem, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 28, 1980, Ser. No. 135,382
Int. Cl.[3] H05B *41/18, 35/00*
U.S. Cl. 315—179 **3 Claims**

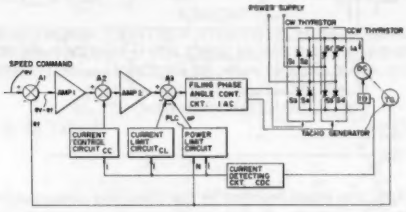


1. A lamp assembly comprising:
a base plate having thereon socket means for connection to a source of power;
a "U" shaped fluorescent bulb affixed to said base plate;
an incandescent bulb affixed to said base plate between the legs of said fluorescent bulb;
a glow switch and associated RFI suppressor contained within said socket means, said glow switch being serially connected in a filament loop comprising: the first and second filaments of said fluorescent bulb and the filament of said incandescent bulb; and
a starting aid positioned externally of said bulbs and attached to said fluorescent bulb, said starting aid being impedance coupled to one side of said filament loop.

4,268,781
DC MOTOR DRIVE SYSTEM

Shigeki Kawada, Hino; Shigeaki Oyama, Hachioji; Yoshiki Fujioka, Hino; Mitsuhiko Hirota, Setagaya, and Toyohiko Nishimori, Hachioji, all of Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Nov. 11, 1977, Ser. No. 850,793
Claims priority, application Japan, Nov. 15, 1976, 51-137144
Int. Cl.[3] H02P *5/16*
U.S. Cl. 318—434 **7 Claims**



1. A DC motor drive system comprising:

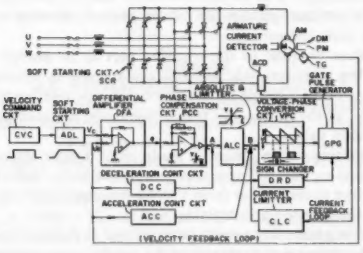
(a) means for detecting the power of the DC motor, said power detecting means including means for detecting the rotational speed and armature current of the DC motor; absolute value means, connected to the means for detecting the rotational speed and armature current of the DC motor, for providing outputs proportional to the absolute values of the rotational speed and armature current of the DC motor; and means, connected to the absolute value means, for multiplying together the outputs porportional to the absolute values of the rotational speed and armature current of the DC motor and producing an output value directly proportional to the power output of the DC motor, providing that the field flux of the DC motor is constant; and

(b) means, connected to said power detecting means, for controlling the rotational speed of the DC motor in accordance with the power output value of said power detecting means and in such a manner that said power output value of said power detecting means does not exceed a predetermined allowed power value for the DC motor.

4,268,782
CONTROL SYSTEM FOR A DC MOTOR

Shigeki Kawada; Yoshiki Fujioka, both of Hino; Mitsuhiko Hirota, Tokyo, and Naoto Ohta, Hino, all of Japan, assignors to Fujitsu Fanuc Limited, Japan

Filed Sep. 7, 1978, Ser. No. 940,279
Claims priority, application Japan, Sep. 8, 1977, 52/108666
Int. Cl.[3] H02D *5/16*
U.S. Cl. 318—434 **5 Claims**



1. A control system for a DC motor employing field poles of permanent magnets and armature comprising:

(a) means for providing an error signal representative of the difference between a commanded motor speed and an actual motor speed;

(b) a thyristor circuit for regulating the armature current of the motor by controlling the firing phase angle of a thyristor in response to the error signal;

(c) a motor speed detector; and

(d) circuit means for preventing demagnetization of the magnets by armature reactive during different actual motor speed conditions, wherein said means varies a clamp level of the error signal to restrict the upper limit of the firing phase angle of the thyristor in a predetermined manner in respose to the actual detected motor speed condition, said clamp level varying means including:

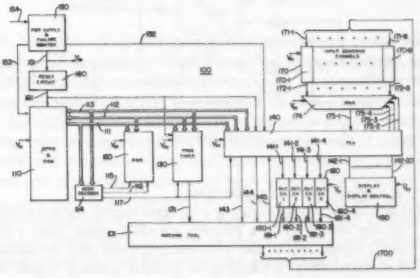
(i) a deceleration control circuit responsive solely to said motor speed detector for setting the clamp level of the error signal to predetermined values in accord with deceleration conditions under different motor speeds for preventing demagnetization of the magnets by armature reaction; and

(ii) an acceleration control circuit responsive solely to said motor speed detector for setting the clamp level of the error signal to predetermined values in accord with acceleration conditions under different motor speeds for preventing demagnetization of said magnets by armature reaction.

4,268,783
CONTROLLER FOR TOOL COMPENSATION SYSTEM

Robert C. Murray, Auburn Heights, Mich., assignor to The Valeron Corporation, Troy, Mich.

Filed Aug. 31, 1978, Ser. No. 938,432
Int. Cl.[3] G05B *23/02*
U.S. Cl. 318—565 **2 Claims**



1. A controller for a stepper motor driven size control apparatus for a machine tool system comprising:

a microprocessor including random access memory means;

non-volatile read-only memory means coupled to the microprocessor, including at least one table of contiguous memory words individually addressable by the microprocessor;

pulser means coupled to the microprocessor and to the stepper motor, operative on command by the microprocessor to generate a step command pulse of predetermined width for transmission to the stepper motor after a time duration determined by the contents of a table entry of the read-only memory means fetched by the microprocessor and transmitted to the pulser means;

a plurality of input command channels coupled between the machine tool system and the microprocessor, a plurality of output command channels coupled between the microprocessor and the machine tool system, a display unit coupled to the microprocessor;

the microprocessor further including means for successively addressing and fetching the contents of the read-only memory table words from one addressable table boundry to another and for successively transmitting each fetched word contents to the pulser means, means for interpreting

input commands received over the input channels, means for generating output commands for transmission over the output channels, adjustable limit means for selecting and indicating a maximum allowable number of machine tool compensations initiated by the controller for the same cutting surface, and means for controlling and monitoring the display unit including means for scanning the adjustable limit means, means for incrementing a counter whenever a cutting surface compensation is initiated, and means for activating a predetermined one of the plurality of output command channels whenever the counter contents equal the maximum number indicated by the adjustable limit means; and

means for furnishing electric power to the microprocessor, the read-only memory means, the pulser means, and the display unit.

4,268,784

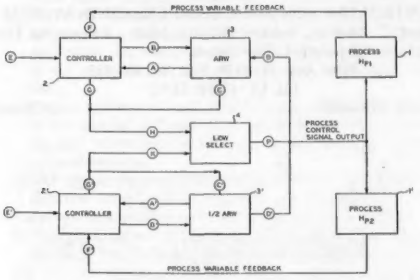
CONTROL METHOD AND APPARATUS WITH RESET WINDUP PREVENTION

Franklin D. Ganaway, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 818,036, Jul. 22, 1977, abandoned. This application Sep. 20, 1978, Ser. No. 944,483

Int. Cl.[2] G05B *11/42*

U.S. Cl. 318—610 **20 Claims**



1. A control method comprising

(a) automatically generating a control signal representative of the deviation of a process variable signal from a set-point signal and of the time integral over said deviation,

(b) automatically generating a process control signal for manipulation of a process parameter,

(c) automatically generating a difference signal representative of the difference between the process control signal and the control signal,

(d) automatically reducing said deviation by a value representative of said difference signal.

4,268,785

TRANSIENT OVERSHOOT, UNDERSHOOT AND DELAY COMPENSATION CIRCUIT IN SYSTEMS COMPRISING REACTIVE FILTER NETWORKS

Gordon D. Svendsen, Belmont, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Sep. 13, 1979, Ser. No. 75,562

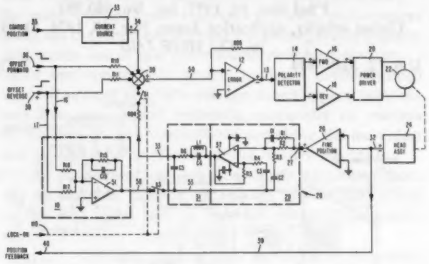
Int. Cl.[3] G05B *5/01*

U.S. Cl. 318—620 **22 Claims**

1. An apparatus for compensation of overshoot, undershoot and delay in response to step signals in systems having reactive filters, comprising in combination:

(a) a reactive filter having an input, an output and a signal return line and having a filter element coupled therebetween, one of said input and output coupled to receive an input step signal; and

(b) a compensation circuit having an input coupled to detect said input step signal, and having an output coupled to said signal return line of the reactive filter, said compensation circuit providing a ground reference for said filter, said compensation circuit coupled to provide a compensation step signal in response to said detected input signal, and to apply it to said signal return line simultaneously with said



input step signal received by the filter, said compensation step signal being of substantially the same magnitude and a predetermined polarity with reference to said input step signal to compensate for a sudden signal level change with respect to said reactive filter, in response to said input step signal.

4,268,786

POSITION PICKUP FOR NUMERICALLY CONTROLLED MACHINE TOOLS

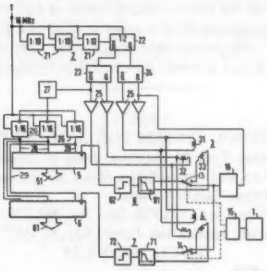
Josef Röhrle, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,309

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847779

Int. Cl.[3] G05R *1/06*

U.S. Cl. 318—661 **2 Claims**



1. In a position pickup for use in numerically controlled machine tools comprising

a resolver coupled to the machine part to be moved and having a primary side and a secondary side in which the phase of the voltage on the secondary side relative to the phase of the voltage on the primary side is a measure of position value,

a digital sine-cosine generator made up of divider stages for generating two voltages which are electrically shifted 90° relative to each other from a clock frequency and supplying them to the primary side, and

means for generating a value proportional to the signal states of the sine-cosine generator at the time of zero crossing of the voltage on the secondary side as a measure of the actual position, including a filter having its input coupled to said secondary side and a comparator having its input coupled to the output of said filter for detecting the zero

cross-over of the filter output, the improvement comprising:

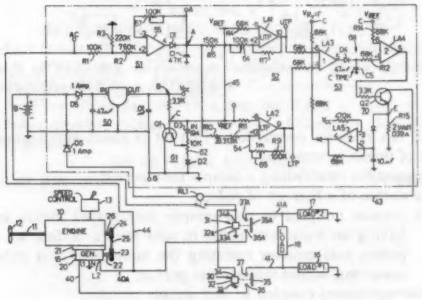
means for deriving a voltage from the primary side; and means to detect the signal state of the sine-cosine generator at the time of zero crossing of the output of said filter when coupled to said means providing a voltage derived by the primary voltage whereby, in successive switching operations the change of the signals state of said sine-cosine generator as so detected may be used for correcting said value proportional to the signal states.

4,268,787

ELECTRONIC CONTROL FOR SWITCHING VARIABLE SPEED/VARIABLE VOLTAGE ELECTRIC GENERATOR

Albert H. Sloan, 4200 Kean Rd., Fort Lauderdale, Fla. 33314

Filed Jun. 25, 1979, Ser. No. 52,004
Int. Cl.³ B62D *63/04*; H02J *1/00, 3/00*
U.S. Cl. 322—8 **10 Claims**



1. In combination:

an electrical generator which exhibits changes in magnitude of electrical power output in response to changes in rotational speed;

an electrical load to be supplied with power solely by said generator;

and electronic control means responsive to changes in generator power output magnitude to connect or disconnect said generator and said load and comprising:

means responsive to occurrence of power output of a predetermined magnitude within a predetermined range of magnitude to connect said generator and said load;

means responsive to any power output magnitude within said range after said occurrence of said power output of predetermined magnitude to maintain said generator and said load connected;

means responsive to occurrence of power output of a magnitude above said range to disconnect said generator and said load;

and means responsive to occurrence for a predetermined interval of time of power output of a magnitude below said range to disconnect said generator and said load.

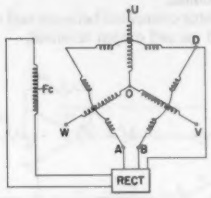
4,268,788

A.C. GENERATOR EXCITING METHOD

Masanobu Takeda, Niiza, and Shigeaki Anzai, Kawagoe, both of Japan, assignors to Denyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1979, Ser. No. 77,243
Claims priority, application Japan, Sep. 19, 1978, 53/114099
Int. Cl.³ H02P *9/14*
U.S. Cl. 322—59 **3 Claims**

1. A method of exciting an alternating current generating means is which an armature winding and exciting windings are wound on one and the same core in such a manner that said exciting windings are series-connected in the form of delta connection with two ends open, and a zero phase current obtained through said two open ends of said exciting windings in the form of delta connection and a phase current obtained from said exciting windings by utilizing at least one of the delta connection points of said exciting windings are combined and



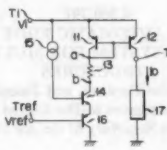
rectified to provide a direct current which is employed to excite said field winding.

4,268,789

LIMITER CIRCUIT

Katsumi Nagano, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 29, 1979, Ser. No. 24,973
Claims priority, application Japan, Apr. 5, 1978, 53-39956
Int. Cl.³ H03K *5/08*
U.S. Cl. 323—315 **10 Claims**



1. A limiter circuit comprising a current mirror circuit having an input terminal to which is supplied an input voltage, and having first and second output terminals; an impedance element to one end of which is connected the first output terminal of said current mirror circuit; a first transistor of first conductivity type having a collector-emitter path, one end of which is connected the other end of said impedance element; a second transistor of second conductivity type having a collector-emitter path which is connected between the other end of said collector-emitter path of said first transistor and a ground potential point and to the base of which are supplied reference potential signals; and bias means for providing the base of said first transistor with base bias.

4,268,790

PROGRAMMABLE HIGH VOLTAGE POWER SUPPLY WITH NEGATIVE GROUND

Sarkis Nercessian, Flushing, N.Y., assignor to Kepco, Inc., Flushing, N.Y.

Filed Mar. 12, 1979, Ser. No. 19,317
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—318 **4 Claims**

1. In a regulated power supply system, the combination of;

a first operational power supply including a first inverting input terminal, a first common terminal and a first output terminal;

a first load terminal connected to ground and said first output terminal;

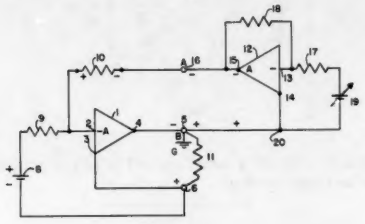
a second load terminal connected to said first common terminal;

a first source of input voltage and a first input resistor connected between said first common terminal and said first inverting input terminal;

a second operational power supply including a second inverting input terminal, a second common terminal and a second output terminal;

a second source of input voltage and a second input resistor connected between said second common terminal and said second input terminal;

a first feedback resistor connected between said second input terminal and said second output terminal;



a second feedback resistor connected between said second output terminal and said first input terminal;

and a connection between said second common terminal and said first output terminal;

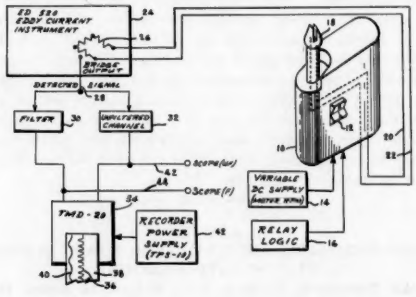
whereby the second common terminal and said first output terminal are at common ground polarity.

4,268,791

DUAL TRACE AUTOMATIC EDDY CURRENT DETECTION SYSTEM FOR MULTILAYER STRUCTURES

Albert P. Rogel, Rancho Cordova, and Joseph J. Scalese, Loomis, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 8, 1978, Ser. No. 968,042
Int. Cl.[3] G01V *33/12*
U.S. Cl. 324—238 **3 Claims**



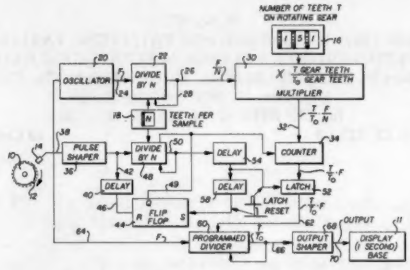
1. An automatic eddy current flaw detection system for inspecting fastener holes in multi-layered structures comprising a motorized scanner having a rotatable probe for insertion into said fastener holes, said probe generating eddy current signals, an eddy current detection system receiving said eddy current signals, recording means for recording the output of the eddy current detection system, a first circuit including filter means, connected between the eddy current detection system and the recording means for providing a filtered detected signal for recording in the recording means whereby flaws in said multilayered structure will be indicated and a second circuit, connected between the edddy current detection system and the recording means which allows the detected signal to pass unfiltered to the recording means, whereby the boundaries between each layer in the multilayered structure will be defined, said recording means presenting the filtered and unfiltered signals in time coincident juxtaposition.

4,268,792

METHOD OF AND APPARATUS FOR MULTIPLYING PULSES

Russel W. Grob, Metamora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Division of Ser. No. 808,834, Jun. 22, 1977. This application Dec. 26, 1979, Ser. No. 106,817
Int. Cl.[3] H03K *5/00, 5/26*
U.S. Cl. 328—24 **4 Claims**



1. A circuit for converting a first set of pulses into a second set of pulses, comprising:

means for establishing a sample time period;

a source of a first set of pulses;

a counter coupled to said sample time period means and having an input connected to said source of first set of pulses, said counter counting the number of first pulses occurring within said sample period;

storage means coupled to said sample counter;

transfer means coupled to said sample counter for transferring the count from said counter to said storage means and to reset said counter at the end of said sample period;

a source of a second set of pulses;

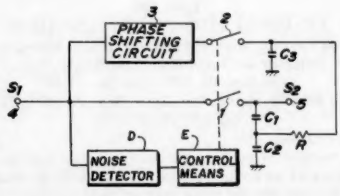
programed divider means having a countdown circuit with an input connected to said source of a second set of pulses and a set input connected to said storage means, an output pulse being generated and said divider means being reset each time the pulses of said second set reduce the count of said set input to zero, said output pulses being equally spaced and the frequency of said output pulses being the count in said storage means multiplied by the magnitude of the reciprocal of the frequency of said second set of pulses.

4,268,793

NOISE ELIMINATING CIRCUIT

Kiyoshi Amazawa; Masaharu Mori, and Takashi Taniyama, all of 50, Kamitoda, Toda-shi, Saitama-ken, Japan

Filed Oct. 12, 1978, Ser. No. 950,567
Int. Cl.[3] H03B *1/04;* H03K *3/013*
U.S. Cl. 328—165 **6 Claims**



1. A noise eliminating circuit comprising an input terminal; an output terminal; first gate switch means coupled between said input and output terminals; control means for opening said

first gate switch means for cutting off an input signal applied to said input terminal in response to a noise entering the circuit and a first holding means coupled to said first gate switch means for holding the output thereof immediately before the same is opened; phase shifter means coupled to the input terminal for generating a phase displaced signal having a phase displacement with respect to said input signal; phase displaced signal gate switch means controlled by said control means and to be opened with said first switch means and coupled to said phase shifter means; second holding means for holding the output of the phase displaced signal gate switch means immediately before such gate switch means is opened; and interconnecting circuit means coupled between said first and second holding means for adding the output of said second holding means and the output of said first holding means at a given time constant, thereby compensating the input signal appearing at the output terminal with the output of said second holding means when the input signal is cut off to eliminate the noise.

4,268,794

SELF-ADJUSTING RAMP GENERATOR

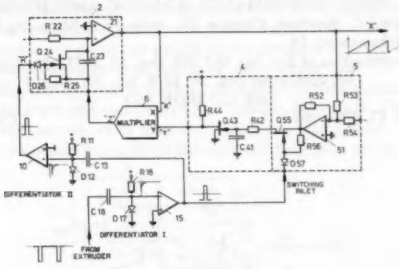
Herbert Handte, Filderstadt, and Friedrich Kollmar, Grafenau, both of Fed. Rep. of Germany, assignors to Moog GmbH, Böblingen, Fed. Rep. of Germany

Filed Jan. 30, 1979, Ser. No. 7,698

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1978, 2804145

Int. Cl.[3] **H03K** *4/08, 6/04*

U.S. Cl. 328—185 **5 Claims**



1. A ramp generator for producing a self-adjusting sawtooth wave in response to an input signal containing a plurality of successive start pulses separating time intervals of variable length, comprising:

a first differentiator circuit arranged to receive said input signal and operative to supply a differentiated first output signal in response thereto;

a second differentiator circuit arranged to receive said differentiated first output signal and operative to supply a double differentiated second output signal in response thereto;

a ramp function generator supplied with said second output signal and operative to produce an output ramp signal in each of said time intervals; and

correction means for varying the slope of the ramp signal produced in any one time interval in response to the length of said one time interval so that such modified-slope ramp signal will equal a predetermined maximum valve at the end of the next successive time interval, if said one and successive time intervals are of equal length; said correction means including a comparator circuit operatively arranged to continuously compare the value of said ramp signal with said predetermined maximum value and to supply a correction signal reflective of the difference therebetween, a storage circuit arranged to receive and store said correction signal and operative to supply said correction signal to said ramp function generator, and switch means interposed between said comparator and storage circuits and supplied with said first output signal and operative to transfer said correction signal to said storage circuit at the end of each time interval.

4,268,795

PULSED VOLTAGE AMPLIFICATION DEVICE WITH DRIFT CORRECTION

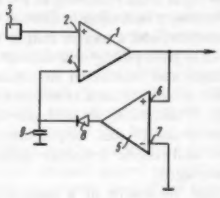
Vladimir A. Zolotenko, 2 Detsky proezd, 2, kv. 18; Vladimir V. Pavlov, ulitsa Sovetskaya, 21, kv. 56; Viktor E. Sokolov, ulitsa Shelkovichnaya, 194, kv. 49, and Alexei N. Syromyatnikov, ulitsa Pushkina, 17/25, kv. 66, all of Saratov, U.S.S.R.

Filed Oct. 16, 1978, Ser. No. 951,833

Claims priority, application U.S.S.R., Jan. 24, 1978, 2564817

Int. Cl.[3] **H03F** *1/02*

U.S. Cl. 350—9 **3 Claims**



1. A pulsed voltage amplification device with drift correction, comprising:

a first differential amplifier having an inverting input, a non-inverting input, and an output;

pulsed voltage source means coupled to said non-inverting input of said first differential amplifier for providing pulsed signals thereto, said first differential amplifier providing amplified output pulses at said output of said first differential amplifier;

a pulsed feedback circuit connecting said output of said first differential amplifier to said inverting input of said first differential amplifier;

said pulsed feedback circuit including a second differential amplifier having a non-inverting input, a grounded inverting input, and an output;

said second differential amplifier having its non-inverting input coupled to said output of said first differential amplifier;

said pulsed feedback circuit further comprising diode switch means for switchably connecting said output of said second differential amplifier to said inverting input of said first differential amplifier; and

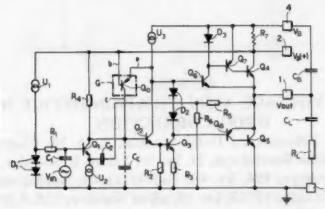
a memory capacitor having a first plate and a second grounded plate, said first plate being coupled to said inverting input of said first differential amplifier and to said diode switch means;

said diode switch means being responsive to each of said amplified output pulses at the output of said first differential amplifier for switchably disconnecting said output of said second differential amplifier from said inverting input of said first differential amplifier, whereby to disable the feedback circuit during the time of occurrence of each of said amplified output pulses at the first differential amplifier output.

4,268,796
LINEAR AMPLIFIER WITH DISTORTION CORRECTION

Sergio Palara, S. Martino di Ferrara, Italy, assignor to SGS-ATES Componenti Elettronici S.p.A., Agrate Brianza, Italy

Filed Mar. 26, 1979, Ser. No. 24,077
Claims priority, application Italy, Mar. 30, 1978, 21744 A/78
Int. Cl.³ H03F *3/30*
U.S. Cl. 330—267 **8 Claims**



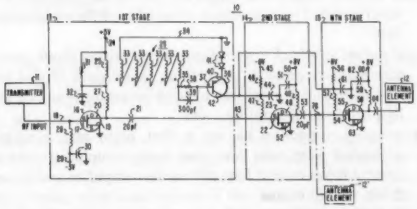
1. In a linear a-c amplifier with a plurality of stages including an input stage, an intermediate stage and a final stage, a first transistor in said input stage receiving an a-c signal to be amplified, a second transistor operating in Class A under the control of said first transistor, and a pair of output transistors in said final stage driven in push-pull by said second transistor via said intermediate stage and connected in cascade across a d-c power supply for producing on a common central terminal an amplified replica of said a-c signal with alternate peaks clipped upon saturation of one of said output transistors coinciding with a cutoff of said second transistor during alternate half-cycles of said a-c signal,

the combination therewith of a normally nonconductive ancillary transistor with an input connection to one of said stages for conducting only during the time of saturation of said one of said output transistors, said ancillary transistor being operatively coupled to said second transistor for biasing same to its conduction threshold prior to desaturation of said one of said output transistors.

4,268,797
SELF-PULSED MICROWAVE POWER AMPLIFIER

Daniel C. Buck, Hanover, and Ricky D. Hess, Annapolis, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 28, 1979, Ser. No. 24,816
Int. Cl.³ H03F *3/193, 3/24*
U.S. Cl. 330—277 **7 Claims**



1. A self-pulsed microwave power amplifier for a radar transmitter, comprising

a first and at least a second amplifying field effect transistor, each having source, drain, and gate portions,

means for coupling the gate portion of the first transistor to the transmitter output,

means for coupling the gate portion of the second transistor to one of the source and drain portions of the first transistor,

means operative to bias the firsrt amplifying transistor at a voltage approximately no greater than its pinch-off voltage to cause said first transistor to provide approximately no greater than class B amplification in response to the presence of each RF input pulse from the transmitter,

a switching transistor,

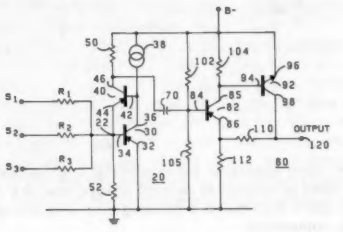
means including the switching transistor responsive to the average current in one of the source and drain portions of the first transistor to bias the second transistor at a voltage sufficient to cause the second amplifying transistor to provide class A amplification,

whereby the second amplifying transistor conducts during the full cycle of the RF signal from the output of the first amplifying transistor while the switching transistor is conducting.

4,268,798
HIGH PERFORMANCE SUMMING AMPLIFIER

Elwood C. Reichart, Chicago, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 861,780, Dec. 19, 1977, abandoned.
This application Feb. 26, 1979, Ser. No. 15,563
Int. Cl.³ H03F *3/18*
U.S. Cl. 330—289 **7 Claims**



1. An improved amplifier comprising:

a high gain amplifier means having an inverting input, an output, a ground, and an output load substantially comprising a constant current source;

a three terminal gain device having first and second terminals and a control terminal, said device having a relatively low a.c. impedance from the control terminal to the first terminal and a relatively high impedance from the control terminal to the second terminal;

output load means comprised of a cascode connected active gain device in series with a passive load means;

means for coupling said control terminal to the output of said high gain amplifier;

means for directly connecting said first terminal to the input of said high gain amplifier;

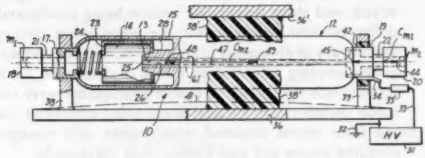
current source resistance connected from the input of said high gain amplifier to the ground; and

means for coupling said second terminal to the load means, whereby the input to the high gain amplifier comprises the input to said improved amplifier and the output of said improved amplifier is taken across said passive load means.

4,268,799
CURVED MIRROR LASERS AND METHODS OF OPERATING SAME

John T. McCrickerd, Costa Mesa, Calif., assignor to Laser Products Corporation, Fountain Valley, Calif.

Filed Jan. 8, 1979, Ser. No. 1,504
Int. Cl.[3] H01S 3/05
U.S. Cl. 331—94.5 C 42 Claims



1. Laser apparatus comprising in combination:

means for providing laser action, including a laser gain medium and a pair of concave end mirrors facing each other via said laser gain medium; and

means for mounting said end mirrors and permitting tilting thereof;

one of said end mirrors having a center of curvature situated between said end mirrors at a distance from the other end mirror of up to one-eighth of the distance between said end mirrors through said laser gain medium; and

said other end mirror having a center of curvature situated between said end mirrors at a distance from each of said end mirrors of at least three-eighth of the distance between said end mirrors through said laser gain medium.

4,268,800
VERTEX-MOUNTED TIPPING BREWSTER PLATE FOR A RING LASER

Thomas F. Johnston, Jr., Sunnyvale, and William P. Proffitt, San Jose, both of Calif., assignors to Coherent, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 16,688, Mar. 2, 1979. This application Apr. 30, 1979, Ser. No. 34,511
Int. Cl.[3] H01S 3/08
U.S. Cl. 331—94.5 C 6 Claims

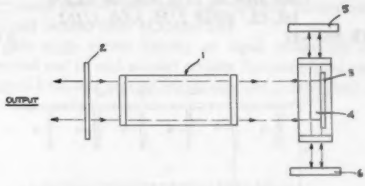
1. In a ring laser having an optical resonator for providing unidirectionally propagating optical energy which includes at least one flat mirror, and having means for adjusting the length of the optical resonator for fine tuning the ring laser which includes a thin optically transmissive tuning plate nominally at Brewster's angle to the optical path and rotatable about a small tip angle from Brewster's angle; and wherein the improvement comprises:

means for mounting said tipping plate near the flat mirror such that both the incident and reflective beam pass through said tipping plate.

4,268,801
MODE-LOCKED LASER USING A SATURABLE ABSORBER IN A CAVITY

Eddy A. Stappaerts, Redondo Beach, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Jul. 17, 1979, Ser. No. 58,149
Int. Cl.[3] H01S 3/098
U.S. Cl. 331—94.5 ML 1 Claim



1. A mode-locked laser for generating short pulses of optical energy comprising:

(a) a laser operating at a first optical frequency and having an amplifier and a first optical resonator which first optical resonator occupies a first spatial volume,

(b) a second optical resonator which occupies a second spatial volume,

(c) said first and second spatial volumes consisting, at least in part, of a common spatial volume that is common to both the first and second spatial volumes,

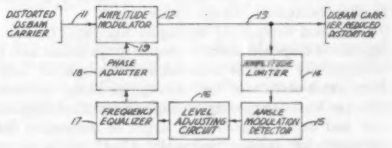
(d) a saturable absorber located within the common spatial volume so as to absorb electromagnetic energy at the first optical frequency, emit electromagnetic energy into the second optical resonator by lasing action at a second optical frequency, and be acted upon by the electromagnetic fields in the second optical resonator so as to effectively reduce the recovery time of the saturable absorber, thus allowing the saturable absorber to mode-lock the laser at a range of wavelength where proper mode-locking is not feasible using the saturable absorber in the absence of the second optical resonator,

(e) said second optical resonator being resonant at the second optical frequency at which the saturable absorber emits electromagnetic energy by lasing action.

4,268,802
MODULATION DISTORTION REDUCER

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec H3H 1T1, Canada, and Sidney T. Fisher, 53 Morrison Ave., Town of Mt. Royal, Montreal, Quebec H3R 1K3, Canada

Filed May 23, 1979, Ser. No. 41,608
Int. Cl.[3] H03C 1/06
U.S. Cl. 332—37 D 3 Claims



1. Distortion reducing apparatus for a distorted double-sideband amplitude modulated carrier with sidebands of unequal amplitude or unequal phase relationship to the carrier, or both, which comprises an amplitude modulator which receives said distorted modulated carrier and delivers the modulated carrier with reduced distortion to an output circuit, and an angle modulation detection and compensation circuit, which receives said modulated carrier with at least some angle modulation and delivers its output as a modulating wave to said amplitude modulator with a phase and level which cause said modu-

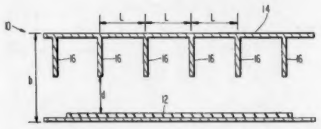
lator to substantially reduce the distortion of said distorted modulated wave.

4,268,803

PERIODIC LID FOR INTEGRATED CIRCUIT

William H. Childs, Gaithersburg, and Peter A. Carlton, Clarksburg, both of Md., assignors to Communications Satellite Corporation, Washington, D.C.

Filed May 24, 1979, Ser. No. 42,376
Int. Cl.³ H01P *1/16, 3/08, 1/162*
U.S. Cl. 333—12 **5 Claims**



1. In a microwave integrated circuit (MIC) package of the type having a substrate, a conductive pattern on the upper surface of said substrate and a conductive enclosure containing said substrate, the interior of said conductive enclosure having a width a and a height b the improvement comprising

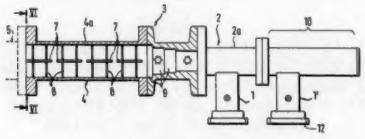
a plurality of regularly spaced conductive members extending from the upper surface of said enclosure toward the substrate for converting said enclosure into a periodic structure and thereby suppressing a band of resonant frequencies within said enclosure.

4,268,804

TRANSMISSION LINE APPARATUS FOR DOMINANT TE_{11} WAVES

Georg Spinner, Feldkirchen-Westerham, and Leo Treczka, Munich, both of Fed. Rep. of Germany, assignors to Spinner GmbH, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,180
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1977, 2737125; Jan. 9, 1978, 2800699
Int. Cl.³ H01P *1/16, 1/161*
U.S. Cl. 333—125 **33 Claims**



1. Transmission line apparatus for transmitting dominant TE-11 electromagnetic waves comprising:

a transmission waveguide having an elongated tubular configuration disposed about a central longitudinal axis and a substantially uniform cross-section throughout, said uniform cross-section of said waveguide being symmetrical about at least one passing through said central longitudinal axis and being substantially larger in dimension than is optimum for transmitting only TE-11 electromagnetic radiation to the extent that other modes can be propagated therethrough, said elongated tubular configuration of said transmission waveguide having a continuous periphery formed of conductive material for conveying said TE-11 electromagnetic waves and guide means for preventing a rotation of the plane of polarization of TE-11 electromagnetic waves transmitted through said transmission waveguide;

waveguide coupling means for supplying TE electromagnetic waves to said transmission waveguide, said waveguide coupling means being of substantially different dimension than said transmission waveguide and including a waveguide tube for receiving high frequency energy to be transmitted, said waveguide tube being dimensioned in relation to said high frequency energy to enable only TE mode waves to propagate therein;

wave transformation means interposed between said waveguide coupling means and said transmission waveguide for conveying TE electromagnetic waves therebetween, said wave transformation means including a short waveguide section of increasing cross-sectional dimension having walls defining bounding surfaces for the wave being conveyed, said short waveguide section being configured to define bounding surfaces for the wave being conveyed which vary in dimension from the dimension of said waveguide coupling means to an effective dimension for said transmission waveguide to enable appropriate wave translation therebetween for said wave being conveyed; and

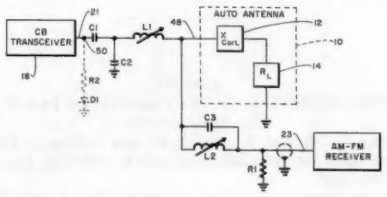
mode filter means disposed intermediate said waveguide coupling means and said transmission waveguide.

4,268,805

CITIZENS BAND BROADCAST BAND COUPLING CIRCUIT

James L. Tanner, Reseda; Bruno A. Rist, Northridge, and George Sanchez, Los Angeles, all of Calif., assignors to Tanner Electronic Systems Technology, Inc., Van Nuys, Calif.

Filed Sep. 20, 1976, Ser. No. 724,797
Int. Cl.³ H01P *5/16;* **H01Q** *1/50*
U.S. Cl. 333—129 **1 Claim**



1. A circuit for coupling a citizens band transceiver and an AM-FM receiver to a standard automobile antenna comprising:

impedance transforming means for matching the citizens band output impedance to the antenna impedance, said impedance transforming means comprising a series tuned network of a split capacitance providing an impedance step-down and a tuning coil;

isolation means connecting the AM-FM receiver to said antenna for isolating the AM-FM receiver from CB transmission energy, said isolation means comprising a parallel tuned circuit in series with the AM-FM radio and further including means for limiting the voltages in said isolation means; and

integral tuning means for manually tuning said coil, said integral tuning means comprising encapsulating means for encapsulating said circuit, an elongate molded plastic tuning knob having central threads embedded in said encapsulating means to form a threaded socket, said tuning knob having a hollow shank extending through the tuning coil and said integral tuning means further including a tuning slug secured in said hollow shank.

4,268,806

ELECTRIC FILTER CIRCUIT CONSISTING OF CHARGE TRANSFER DEVICE (CTD) LINES

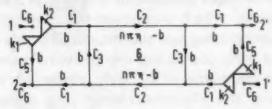
Hermann Betzl, Albert Rosshaupterstr. 130, 8 Muenchen 70, and Friedrich Kuenemund, Strassbergerstr. 73, 8 Muenchen 40, both of Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,613

Claims priority, application Fed. Rep. of Germany, Jan. 24, 1977, 2702680

Int. Cl.[3] H03H *17/00, 11/00;* **G11C** *19/28*

U.S. Cl. 333—165 **4 Claims**



$$k_1 = -k_2 = 1 + 2R,\ R = \frac{C_3}{C_2},\ C_6 = C_5 + C_1$$

$$C_2 = C_3 + C_1,\ \frac{C_5}{C_1} = \frac{R}{1+R},\ \eta = \frac{f}{f_0}$$

1. An electric filter comprising a cascade arrangement (FIG. 6) including successive four-arm branching circuits (FIG. 5), the branching circuits comprising respective self closed line loops (6, 6') for determining the frequency-dependent transmission characteristics of the filter, said self closed line loops (6, 6') each having an input coupling (FIG. 3) for supplying an input signal to the self closed line loop, and an output coupling (FIG. 3) for the withdrawal of an output signal from the self closed line loop, the signal within the self closed line loop having a phase constant of generally $2n\pi$ (where n is a positive integer) in relation to the phase of the input and output signals at a pass middle frequency (f_o), the cascade arrangement further including intermediate coupling loop means (7) between the successive four-arm branching circuits (6, 6'), each intermediate coupling loop means (7) forming a further self closed line loop with an adjoining part of the output coupling of the preceding four-arm branching circuit (6) and an adjoining part of the input coupling of the succeeding four-arm branching circuit (6'), said further self closed line loop including amplifiers (K_1, K_1') with voltage amplification factors which are smaller than the voltage amplification values required for operating each of said branching circuits (6, 6') as a substantially Loss-free reactance branching circuit at the pass middle frequency (f_o), but which voltage amplification factors are not less than one.

4,268,807

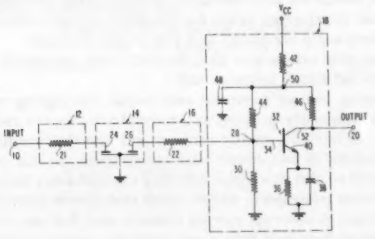
BAND-PASS FILTER AND GAIN STAGE

Lewis C. Spence, 948 Avenue East, Rivera Beach, Fla. 33404

Filed Jul. 13, 1978, Ser. No. 924,317

Int. Cl.[3] H03H *9/56, 9/52, 11/04*

U.S. Cl. 333—191 **27 Claims**



1. A band-pass filter and gain stage comprising:

(a) a monolithic filter having a first filter element and a second filter element, said first and second filter elements being connected to have a common ground;

(b) a first resistor having a first end and a second end and having a substantially pure resistance value selected from the range of 200–2200 ohms, said first end being connected to said first filter element;

(c) a second resistor having a first end and a second end and having a substantially pure resistance value selected from the range of 200–2200 ohms, said first end being connected to said second filter element; and

(d) gain stage means having an input connected to said second end of said second resistor for amplifying an input signal from said second end an amount greater than 20 dB.

4,268,808

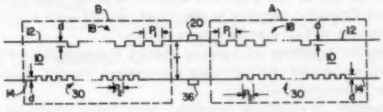
ACOUSTIC WAVE DEVICE

John Melngailis, Newton, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 21, 1979, Ser. No. 40,667

Int. Cl.[3] H03H *9/54, 9/64, 9/25*

U.S. Cl. 333—195 **21 Claims**



1. A surface acoustic wave (SAW) device comprising:

A. a crystal substrate having two substantially planar surfaces,

B. a first SAW-to-plate mode coupler on a first of said surfaces, said first coupler including:

first SAW converting means for converting a portion of an incident SAW to a bulk acoustic wave (BAW), said first SAW converting means including a plurality of parallel linear surface perturbations, and

first BAW converting means for converting a portion of an incident BAW to a SAW, said first BAW converting means including said plurality of surface perturbations,

C. a first BAW reflector on the first of said surfaces including means for reflecting a portion of an incident BAW,

D. a second BAW reflector on the second of said surfaces including means for reflecting a portion of an incident BAW,

wherein said second BAW reflector is positioned to reflect a portion of BAW's incident thereon and propagating from said first SAW converting means and said first BAW reflector, to said first BAW converting means, and

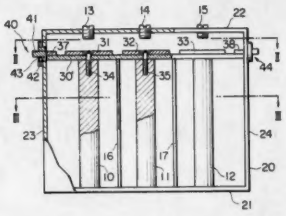
wherein said first BAW reflector is positioned to reflect a portion of BAW's incident thereon and propagating from said second BAW reflector, to said second BAW reflector, and

whereby SAW's propagating on said first surface at said first BAW converting means resonantly interact with SAW's produced on said first surface by said first BAW converting means.

4,268,809
MICROWAVE FILTER HAVING MEANS FOR CAPACITIVE INTERSTAGE COUPLING BETWEEN TRANSMISSION LINES

Mitsuo Makimoto, and Sadahiko Yamashita, both of Kawasaki, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 31, 1979, Ser. No. 71,492
Claims priority, application Japan, Sep. 4, 1978, 53-109003
Int. Cl.³ H01P *1/201, 7/02*
U.S. Cl. 333—202 **17 Claims**



1. A microwave filter having a conductive casing with top and bottom walls and opposed pairs of side and end walls, comprising within said casing:

a dielectric member extending parallel with said side walls;

a plurality of conductive regions arranged on said dielectric member so that each conductive region is capacitively coupled with an adjacent conductive region;

a plurality of parallel transmission lines successively arranged between said end walls and spaced from said top and bottom walls, each being electrically connected at one end to one of said walls and supported at the other end by said dielectric member in electrical contact with a respective one of said conductive regions;

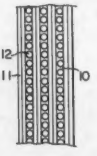
means for injecting microwave energy through one of said end walls and withdrawing microwave energy through the other end wall; and

a plurality of shielding members each being disposed between adjacent ones of said transmission lines to prevent microwave energy propagating along each of said transmission lines from coupling with an adjacent transmission line.

4,268,810
ELECTRICAL ARTICLE HAVING ELECTRICAL COIL AND METHOD FOR MANUFACTURING SAME

Yoshisuke Iwasa, and Shigehiko Sakura, both of Yokohama, Japan, assignors to Sumitomo Bakelite Company Limited, Japan

Filed Jul. 30, 1979, Ser. No. 61,958
Claims priority, application Japan, Jul. 31, 1978, 53-92529; Jul. 31, 1978, 53-92530; Aug. 1, 1978, 53-93163
Int. Cl.³ H01F *7/06;* **H01H** *9/00;* **B05D** *5/12;* **H01F** *5/06*
U.S. Cl. 336—205 **23 Claims**



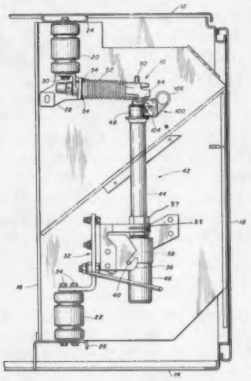
1. An electrical article having an electrical coil in which a sheet of paper, cloth or non-woven fabric comprising cellulose as major constituent is used as at least a part of interlayer insulator, characterized in that the sheet is preliminarily impregnated with (a) one or more pretreating resins selected from the group consisting of phenolic resins, s-triazine ring compound resins and phenol-s-triazine ring compound co-condensation resins and further impregnated with (b) a thermosetting resin composition, and said pretreating resin (a) and said thermosetting resin composition (b) are hardened.

16. A method for manufacturing an electrical article having an electrical coil in which a sheet material selected from the group consisting of paper, cloth and non-woven fabrics comprising cellulose as major constituent is used as at least a part of interlayer insulator, which comprises the pretreatment step consisting of impregnating said sheet material with a varnish of (a) a pretreating resin containing one or more resins selected from the group consisting of phenolic resins, s-triazine ring compound resins, and phenol-s-triazine ring compound co-condensation resins, and then drying to bring said pretreating resin (a) to semi-hardened or completely hardened state; the impregnation step consisting of impregnating the pretreated sheet material with (b) a thermosetting resin composition; and the final step of hardening said pretreating resin (a) and said thermosetting resin composition (b).

4,268,811
CIRCUIT INTERRUPTING DEVICE

David M. Evans, Palatine, and Edward J. Rogers, Chicago, both of Ill., assignors to S&C Electric Company, Chicago, Ill.

Filed Feb. 24, 1976, Ser. No. 660,872
Int. Cl.³ H01H *71/20, 85/20*
U.S. Cl. 337—156 **31 Claims**



1. A device for interrupting electrical current comprising:

circuit interrupting means for interrupting electrical current electrically connected to a first circuit terminal;

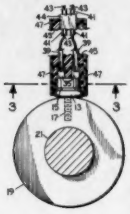
a movable conductive element electrically connected to a second circuit terminal; and

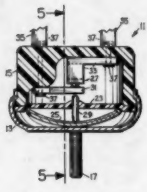
gripping contact means on said circuit interrupting means for releasably gripping said movable conductive element to electrically serially connect said movable conductive element to said circuit interrupting means so that movement of said movable conductive element away from said circuit interrupting means causes said circuit interrupting means to interrupt current between said first and second circuit terminals before said gripping contact means releases said movable conductive element, said gripping contact means and said circuit interrupting means constituting the exclusive conductive path between said movable conductive element and said first terminal.

4,268,812
MINIATURE DEVICE FOR SENSING OVERHEATING OF BEARINGS

Jesse D. Satterlee, 1012 S. Oak St., Hillsboro, Ill. 62049

Filed Jun. 18, 1979, Ser. No. 49,211
Int. Cl.[3] H01H 37/04
U.S. Cl. 337—380 5 Claims



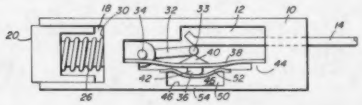


1. A miniature bearing-temperature-sensing device, comprising: a shallow flat-bottomed good-heat-conductive metallic cup, a therewith-cavities-mating inverted cup molded of heat-resistant and electrically insulating hard-plastic material, a disc of similar insulating material interposed between said cups to divide the space enclosed by said mated cups into a lower shallow chamber and an upper shallow chamber, relatively movable switch contacts mounted in said upper chamber, a bimetallic snapdisc thermostat loosely held in said lower chamber with its convex surface when cool lying in contact with the bottom wall of said metallic cup, means responsive to snap-flexing of said thermostat for moving said contacts between their circuit-controlling positions, a metallic rod heat-conductively fixed to and depending from the bottom of said metallic cup for insertion into a socket formed in an element of a bearing to be temperature-monitored, a close-fitting plastic-sleeve housing surrounding said cups, and an insulating packing material filling the space between said housing and said cups, the diameters of said cups being less than twenty millimeters.

4,268,813
RESETTABLE THERMAL CUT-OFF SWITCH

Hadley K. Burch, Pittsfield, Vt., assignor to B/K Patent Development, Highland Park, Ill.

Filed Sep. 17, 1979, Ser. No. 76,339
Int. Cl.[3] H01H 61/00
U.S. Cl. 337—118 10 Claims



1. A thermally operated, resettable, electrical switch assembly in which an electrical circuit is completed when first and second contact elements are in contact and is interrupted when the contact elements are disengaged, comprising:

a housing,

a first contact element,

a base element,

a second contact element supported by said housing and biased toward said base element, and being adapted to contact said first contact element and to engage said first contact element between said second contact element and said base element,

biasing means for urging said first and second contact elements apart,

fusible material solid below a predetermined temperature and liquid above it, and

containing means in said housing for containing said fusible material, at least a portion of said containing means being a resilient wall supportably abutting said base element, said fusible material filling said containing means,

said assembly having a first, second and third mode,

in said first mode, said fusible material being below said predetermined temperature and being solid, and said first contact element being engaged in contact with said second contact element between said second contact element and said base element,

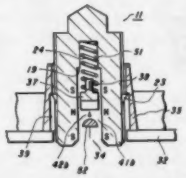
in said second mode, said fusible material being above said predetermined temperature and being liquid, and said first contact element being disengaged from said second contact element,

in said third mode, said first contact element being disengaged from said second contact element, said fusible material being below said pre-determined temperature and being solid.

4,268,814
SOLID STATE KEYBOARD

W. S. Henrion, Houston, and Raymond K. Erickson, Missouri City, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 26, 1978, Ser. No. 955,075
Int. Cl.[3] H01L 43/04
U.S. Cl. 338—32 H 5 Claims



1. A solid state keyboard switch having at least one key member with an actuation member having an actuation surface, comprising:

(a) a base member having a major surface;

(b) a plunger member extending from the actuation member, comprised of a magnetic material and movable in an axis perpendicular to the major surface in response to manual pressure on the actuation surface, the plunger member having a magnetic field pointing in one direction along the axis in a first predetermined region and pointing in the opposite direction along the axis in a second predetermined region wherein the plunger member is bifurcated, providing three magnetic poles in each of the bifurcations distributed along the axis of movement of the plunger member, the first and the third pole being of one polarity and of the same polarity in each bifurcation, and the second pole being of the opposite polarity to provide sharply defined opposite fields providing an abrupt, positive change in the magnetic field between the first and second predetermined regions;

(c) resilient means for normally biasing the plunger member away from the major surface thereby forcing the plunger

member to return to a non-activated position upon release of manual pressure from the actuation surface; and

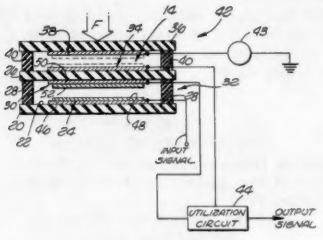
(d) magnetic field sensing means positioned in fixed relation with respect to the base member and being responsive to the relative position of the plunger member for generating a recognized electrical signal in response to the abrupt, positive change.

4,268,815

MULTI-FUNCTION TOUCH SWITCH APPARATUS

Franklin N. Eventoff, 2351 Lake View Ave., Los Angeles, Calif. 90039, and M. Tyrone Christiansen, 629 N. Rossmore Ave., Los Angeles, Calif. 90004

Filed Nov. 26, 1979, Ser. No. 97,610
Int. Cl.³ H01C *10/10, 10/12*
U.S. Cl. 338—69 **6 Claims**



1. A dual function, touch switch apparatus comprising, in stacked configuration:

a first support member having a top surface;

a first conductor ply positioned on the top surface of the first support member;

a second support member having a bottom surface facing the top surface of the first support member and having a top surface, the second support member being spaced from the first support member;

a second conductor ply juxtaposed opposite the first conductor ply and affixed on the bottom surface of the second support member, in normally spaced-apart relationship for defining a first switch;

at least one of the first and second conductor plies, comprising:

a first conductor layer attached to the adjacent one of the first and second support members, and

a first semiconductor layer affixed on the first conductor layer and juxtaposed opposite the spaced-apart other of the first and second support members;

a third conductor ply on the top surface of the second support member;

a third support member having a top surface and a bottom surface facing but spaced from the top surface of the second support member; and

a fourth conductor ply on the bottom surface of the third support member and juxtaposed opposite the third conductor ply in normally spaced-apart relationship thereto for defining a second switch, at least the second and third support members being resiliently deformable in response to the application of a transverse force for making electrical contact between the first and second conductor plies and between the third and fourth conductor plies

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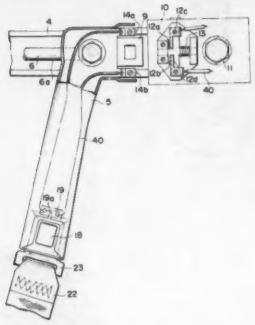
4,268,816

SAFETY ALARM SYSTEM FOR AN AUTOMATIC SEAT BELT

Hideoki Matsuoka, Yokohama, and Yoshimi Yamamoto, Shizuoka, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama and Fuji Kiko Kabushiki Kaisha, Tokyo, both of, Japan

Filed Mar. 17, 1980, Ser. No. 130,651
Claims priority, application Japan, Mar. 15, 1979, 54-33841
Int. Cl.³ B60R *21/10*
U.S. Cl. 340—52 E **10 Claims**



8. A passive seat belt system for an automotive vehicle, comprising:

a seat belt placed in position in the automotive vehicle;

an emergency release tongue connected to the seat belt;

a guide rail arranged on the automotive vehicle in its longitudinal direction;

a slider which slides to and fro along the guide rail;

an emergency release buckle coupled to the slider for locking on the emergency release tongue when the emergency release tongue is inserted into the emergency release buckle;

a slider tongue connected to the slider;

an anchor buckle fixed to the vehicle for locking on the slider tongue when the slider is in a position along the guide rail thereby to tighten the seat belt about a person seated in the seat and to insert the slider tongue into said anchor buckle;

first means for electrically detecting whether the slider tongue is properly locked into the anchor buckle;

second means for electrically detecting whether the emergency release tongue is properly locked into the emergency release buckle; and

means for providing an alarm in response to the first and the second detecting means whenever either of the first and second detecting means detects improper locking of the slider tongue into the anchor buckle, or of the emergency release tongue into the emergency release backle.

4,268,817

CHECK CONTROLLED METERING DEVICE

Luther G. Simjian, 1750 S. Ocean La., Fort Lauderdale, Fla. 33316

Filed Feb. 13, 1980, Ser. No. 120,983
Int. Cl.³ H04Q *1/00*
U.S. Cl. 340—147 A **10 Claims**

1. A metering device of the postage meter type or similar type comprising:

a metering mechanism including printing means for printing adjustable indicia representative of monetary units;

register means including a credit register and a cumulative register coupled to said printing means for registering in response to the operation of said printing means respec-

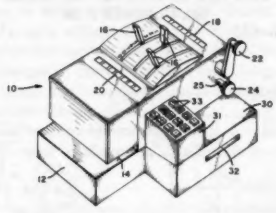
tively the credit balance remaining in the metering mechanism and the cumulative monetary units printed;

control means coupled to said credit register and said printing means for preculding operation of said printing means when said credit register assumes a condition representative of a minimum credit balance;

resetting means coupled to said credit register for resettng said credit register to a condition representative of an increased credit balance;

check accepting means coupled to said metering mechanism for accepting a check;

decoding means cooperatively associated with said accepting means for determining the authenticity of a check



accepted by said accepting means by sensing an encoded field of a respective check and in response to such check being authentic providing a first signal;

manually operable keying means for providing an operator code responsive second signal;

validation means coupled for receiving said first signal and said second signal and in response to said signals being of predetermined character rendering said resetting means operable for resetting said credit register to a condition representative of a increased credit balance, and

invalidating means coupled to said resetting means and said check acceptance means for invalidation a check determined valid responsive to said resetting means having been rendered operable and reset said credit register.

4,268,818

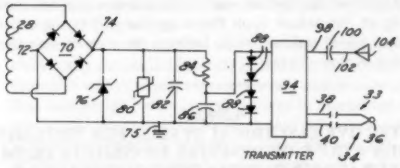
REAL-TIME PARAMETER SENSOR-TRANSMITTER

Murray W. Davis, 20501 Woodmont, Harper Woods, Mich. 48225; Matthew J. Diedzic, 14500 Prospect, Apt. 131, Dearborn, Mich. 48126; Robert F. Knapp, Livonia, and Bruce F. Whitney, South Lyon, both of Mich., assignors to Murray W. Davis, Harper Woods and Matthew J. Diedzic, Dearborn, both of, Mich.

Filed Mar. 20, 1978, Ser. No. 888,143

Int. Cl.[3] G01D *5/12*; H04B *3/54*

U.S. Cl. 340—870.38 **37 Claims**



1. In an apparatus for directly measuring at least one parameter of an electrically energized alternating current carrying conductor and including a transmitter for continuously transmitting a signal proportional to said parameter, the improvement comprising:

means including a plurality of turns of wire wound around a mandrel for receiving only induced energy from said energized conductor for energizing said transmitter,

said plurality of turns of wire formed as the secondary winding of an air core transformer; and

said mandrel is at the same electrical potential as said conductor.

4,268,819

SYNCHRO MOTOR TYPE INSTRUMENT

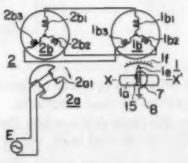
Masashi Wakayama, Kamisatomachi, Japan, assignor to Tamagawa Seiki Kabushiki Kaisha, Tokyo, Japan

Filed May 4, 1979, Ser. No. 36,026

Claims priority, application Japan, May 15, 1978, 53/63915[U]

Int. Cl.[3] G08C *19/00*

U.S. Cl. 340—870.34 **2 Claims**



1. A synchro motor instrument comprising:

a synchro transmitter including a stator having a first three-phase AC winding and a rotor having a single phase AC winding;

a synchro receiver including a stator having a second three-phase AC winding and a rotor having two magnetic poles, said rotor fabricated of a high permeability material;

said rotor of said synchro receiver further including a needle and an automatic return means attached thereto, said needle having a predetermined OFF position;

said first and second three-phase AC windings connected together, wherein when said transmitter rotor is displaced by a specific rotational angle, AC currents flow between said first and second three-phase AC windings to thereby cause a torque to be exerted on said synchro receiver rotor, whereby said receiver rotor and said needle attached thereto rotate an angle equal to said specific rotational angle, providing that said rotor of said synchro transmitter is provided with a single phase AC excitation signal;

and wherein said automatic return means causes said receiver rotor and said needle attached thereto to rotate to said predetermined OFF position of said needle in the absence of the providing of said single phase AC excitation signal to said synchro transmitter rotor.

4,268,820

INTEGRATING TYPE ANALOG-TO-DIGITAL CONVERTER

Kyuichi Hareyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 11, 1978, Ser. No. 941,353

Claims priority, application Japan, Sep. 9, 1977, 52-109368

Int. Cl.[3] H03K *13/02*

U.S. Cl. 340—347 NT **16 Claims**

1. An analog-to-digital converter comprising:

means for setting a plurality of successive time intervals,

an integrator,

means for setting the output signal of said integrator at a start value at the initiation of said plurality of successive time intervals,

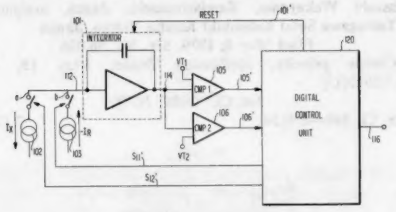
means for applying an analog input signal to said integrator for said plurality of successive time intervals,

a source of a reference signal of opposite polarity to that of said analog input signal,

means for detecting that the output level of said integrator

exceeds a predetermined value at a time point when each of said time intervals terminates, said predetermined value having the same polarity as that of said analog input signal and being larger than said start value in absolute value,

means responsive to said detecting means for supplying said reference signal to said integrator in superposition on said analog input signal during the succeeding time interval,



means for applying only said reference signal to said integrator after said plurality of time intervals,

means for detecting the time point when the output level of said integrator returns to said start value, and

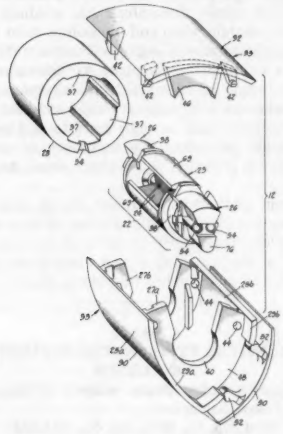
means for accumulating a digital count proportional to the total duration of the time when said reference signal is applied to said integrator.

4,268,821

MAGNETIC DISPLAY DEVICE

Gregory L. DeSmet, Arcadia, Calif., assignor to Fischbach and Moore, Inc., New York, N.Y.

Filed Feb. 1, 1977, Ser. No. 764,633
Int. Cl.[3] G08B *5/30*
U.S. Cl. 340—378.1 **27 Claims**



1. A multiple position electromagnetically actuated display element comprising

a stator having wound thereon at least three but less than five individually addressable coils, each of said coils being adapted for connection to a source of electrical energy,

a housing having a plurality of faces, the number of faces being equal to the number of said coils wound on said stator, said housing being configured to substantially enclose said stator and being rotatably affixed to said stator,

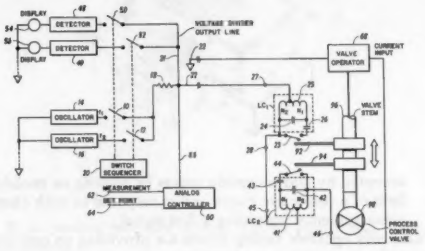
magnetic means having a plurality of poles, the number of said poles being equal to the number of said coils on said stator, said magnetic means being configured to be affixed to said housing in such a manner that said poles are disposed circumferentially about said stator, the spacing between said poles corresponding to the spacing between said coils on said stator so that when one of said coils is energized, the corresponding pole of said magnetic means is attracted thereto, causing said magnetic means and said housing to rotate to place one of said faces of said housing in a display position.

4,268,822

APPARATUS FOR DETERMINING THE STATE OF EACH OF A PLURALITY OF BI-STATE DEVICES

Everett O. Olsen, Wrentham, Mass., assignor to The Foxboro Company, Foxboro, Mass.

Filed Oct. 18, 1978, Ser. No. 952,525
Int. Cl.[3] G08B *1/08*
U.S. Cl. 340—533 **24 Claims**



1. In a system for detecting at a central station the state of each of a plurality of bi-state devices located in field locations remote from said station; apparatus comprising:

a two-wire line extending from said station to said field locations;

signal-generating means coupled to said two-wire line at said central stations for producing a plurality of a-c excitation signals having different frequencies;

a plurality of field located state sensors for said bi-state devices, respectively, with each sensor having parallel resonant means tuned to the frequency of a corresponding excitation signal assigned thereto;

means coupling all of said parallel resonant means in series with each other and with said two-wire line;

switching means coupled to each bi-state device and the respective parallel resonant means to control the resonance of the respective parallel resonant means so as to produce at the associated state sensor in response to the application of the corresponding excitation signal a field signal having a magnitude dependent upon the state of the respective bi-state device;

detector means coupled to said two-wire line at said central station to develop for each state sensor a control station signal dependent upon the magnitude of the associated field signal and serving to indicate the state of the respective bi-state device.

4,268,823

PROTECTIVE ELECTRICAL SYSTEM FOR PROVIDING INDICATIONS OF REMOVAL OF OBJECTS FROM PLURAL MONITORED LOCATIONS BY USE OF PARALLEL-CONNECTED OBJECT-SENSORS

Robert F. Rauchut, Ivyland, and Louis J. Caparoni, Audubon, both of Pa., assignors to ICI Americas Inc., Wilmington, Del.

Filed Nov. 2, 1979, Ser. No. 90,847
Int. Cl.[3] G08B *13/18*
U.S. Cl. 340—570 **23 Claims**

1. Apparatus for providing first remote indications of the removal of any of a plurality of protected objects from any of a plurality of corresponding monitored locations, and for pro-

viding second remote indications of the monitored location at which such removal has occurred, comprising:

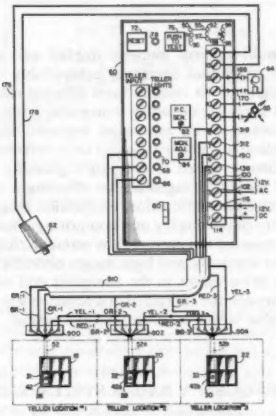
a plurality of object-sensing means, one at each of a plurality of monitored locations and each disposed so that its conductance changes from a normal reference level to a different level in response to removal of the associated protected object from its monitored location;

paralleling connection means connecting said plurality of object-sensing means in a parallel circuit with each other;

a source of supply voltage connected across said parallel circuit to apply a voltage across each of said object-sensing means;

common current-sensing means for said object-sensing means, and means connecting said common current-sensing means in series with said parallel circuit, across said source of supply voltage, to produce first electrical signals at said common current-sensing means which are indicative of changes in current through said common current-sensing means due to said changes in conductance of any of said object-sensing means;

a plurality of location-identifying means, comprising a plurality of conductance-sensing means each associated with



and positioned adjacent a different corresponding one of said object-sensing means for producing a set of separate corresponding second signals indicative of changes in the conductance of the corresponding adjacent object-sensing means;

separate conductor means connected to each of said location-identifying means; and

indicator means remote from said object-sensing means but electrically connected thereto, and responsive to said first signals at said common current-sensing means to produce first indications indicative of changes in conductance of any of said object-sensing means to said different level and to terminate said first indications when the conductances of all of said object-sensing means return to said reference levels, and responsive to said second signals to produce second indications indicative of which of said object-sensing means has changed its conductance to said different level, said indicator means comprising latching circuit means for causing said second indications to persist despite replacement of the previously removed protected object, and reset means manually operable after said replacement to terminate said second remote indications and to return said apparatus to its original state.

4,268,824

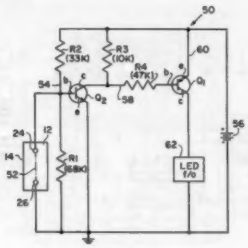
PLANT SOIL MOISTURE LEVEL-SIGNALING DEVICE FOR HOUSEHOLD AND COMMERCIAL USE

Reed E. Phillips, 220-55 46th Ave., Bayside, N.Y. 11361

Continuation of Ser. No. 859,037, Dec. 9, 1977, abandoned. This application Apr. 13, 1979, Ser. No. 29,766

Int. Cl.[3] **G08B** *21/00*

U.S. Cl. 340—604 **3 Claims**



1. A battery powered visual-signaling device for use in normally moist household plant soil for indicating after an interval of time the loss of moisture therefrom to an extent requiring replenishment, said device comprising a battery-operated signaling light means for switching from a normally "off" operating mode to a fully "on" operating mode thereof when the moisture content of the soil has decreased to a predeterminately dry condition such that moisture replenishment is required, a moisture-sensing probe extending in depending relation from said device having an operative inserted position in said plant soil continuously for the duration of said time interval such that initially said normally high moisture content of said plant soil is electrically effective to cause a low resistance condition of said probe and subsequently the gradual diminishment of said moisture content of said plant soil causes a corresponding increase in the probe resistance over a predetermined range, a fixed resistance of a selected value electrically connected in parallel relation directly across said probe for providing a combined resistance of said probe and fixed resistance which varies as the moisture content of the plant soil correspondingly varies between said high and diminished moisture contents, and a battery-powered control circuit electrically connected with said combined resistance and responsive thereto to produce said "on" operating mode in said signaling light means only in said increased resistance condition of said moisture-sensing probe, the variation of said combined resistance being less than the variation in resistance of said probe alone so as to enabling actuation of said control circuit for relatively abruptly switching said signaling light means between said "on" and "off" operating modes at a desired plant soil moisture content, such that said control circuit requires a minimum of operating battery power in said "off" operating mode of said signaling light means so as to thereby contribute to a more effective duration of operational use of said device and enable continued use of a powering battery over an extended time interval despite the continuous operative inserted condition of said device whereby said device is continuously monitoring and sensing the moisture content of the plant soil to control the actuation of said control circuit for switching said signaling light means.

4,268,825

SYSTEM FOR MONITORING THE MOVEMENT OF OBJECTS PARTICULARLY THE FEEDING OF SEEDS

Dov Kaplan, Doar Na Emek Hayarden, Israel, assignor to Dickey-john Corporation, Auburn, Ill.

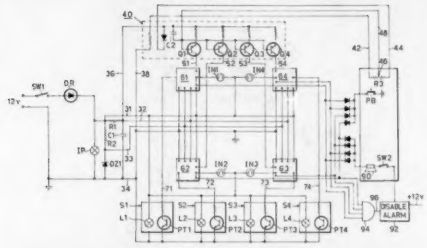
Filed Feb. 6, 1974, Ser. No. 440,200

Int. Cl.[3] **G08B** *21/00*

U.S. Cl. 340—684 **9 Claims**

1. A system for monitoring the movement of objects, partic-

ularly seeds, through a plurality of predetermined paths, comprising: a plurality of sensors each sensing the movement of an object through one of the paths and producing electrical signals in response thereto; a measuring circuit receiving said electrical signals and producing therefrom a measurement of the rate at which the objects move through the paths, sequencing means automatically connecting the rate measuring circuit



sequentially to the plurality of sensors for predetermined time periods, an indicator for each sensor indicating when the measured rate of the objects in the respective path varies from a predetermined limit, and means automatically interrupting the further sequencing of the sequencing means upon failure of a sensor to detect a predetermined number of objects in its respective path during any of said time periods.

4,268,826

INTERACTIVE DISPLAY DEVICES

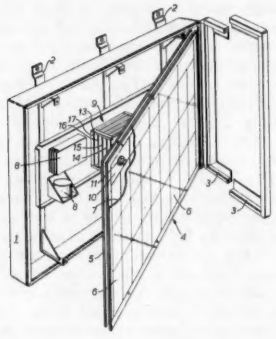
Harold A. Scott, and David J. Martin, both of Stroud, England, assignors to Grundy & Partners Limited, Gloucestershire, England

Filed May 14, 1979, Ser. No. 38,850

Claims priority, application United Kingdom, Jul. 26, 1978, 31220/78

Int. Cl.³ G06F *3/147*

U.S. Cl. 340—707 **8 Claims**



1. An interactive display device comprising a plurality of arrays of discrete display elements; driver circuit means which scan the arrays of said plurality thereof simultaneously with signals which determine whether each display element is in the ON or the OFF state and which include coded pulses the coding of which is representative of the array being scanned; and means for inputting data comprising a light pen which can be pointed at a selected display element relating to the input data, and circuit means operative to identify the coded pulses and thus identify the array containing the selected display element.

4,268,827

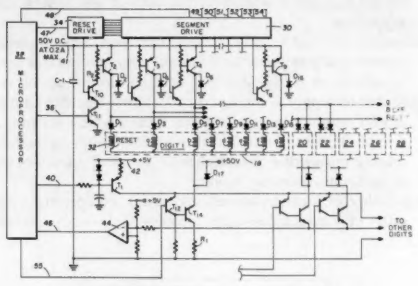
OPERABILITY VERIFICATION FOR SEGMENTAL ELECTROMAGNETIC DISPLAY

James F. Hughen, Austin; Jimmy R. Herring, Round Rock; David A. Biedermann, Austin, all of Tex., and Christopher W. Ovens, Boulder, Colo., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed Sep. 21, 1979, Ser. No. 77,691

Int. Cl.³ G09F *9/32*

U.S. Cl. 340—715 **14 Claims**



1. In a multi-segment numeric display unit comprising a plurality of individual segments controllably operable for collective segments to visually form selected numeric values, each of said segments including a magnetic latch coil for individual operation of its associated segment, segment drive means for selectively energizing said latch coils and a reset coil operable when activated to energize a plurality of the latch coils of said individual segments for effecting a visual display of predetermined numeric value, verification means for verifying operability of the display unit comprising measuring means operable to measure the current flow seriatum through the coil of each of the segments, and logic means operable to inactivate the segment drive means to the energized coil when the current value through the energized coil achieves a predetermined switching value within a maximum time period.

4,268,828

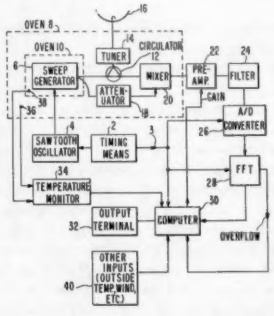
SWEPT FREQUENCY RADAR SYSTEM EMPLOYING PHASELESS AVERAGING

Robert W. Cribbs, Placerville; Billy L. Lamb, Sacramento, and Thomas J. DeLacy, Los Altos, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Sep. 19, 1979, Ser. No. 77,250

Int. Cl.³ G01S *13/95*

U.S. Cl. 343—5 W **21 Claims**



1. A swept frequency microwave system for analyzing a target comprising:

a source of microwave radiation whose frequency is made to sweep in a repetitive fashion;

means connected to said source for bouncing said radiation off the target, said bouncing means producing a series of heterodyned signals;

means connected to said bouncing means for taking the Fourier power transform of a group of said heterodyned signals; and

means connected to said Fourier power transform means for averaging the Fourier power transformed signals over a plurality of frequency sweeps.

4,268,829

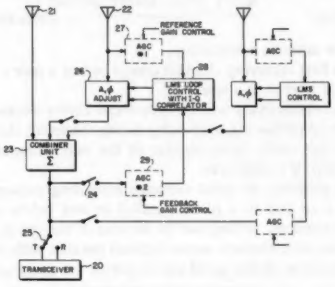
STEERABLE NULL ANTENNA PROCESSOR WITH GAIN CONTROL

Herbert F. Baurle, and Raymond J. Masak, both of E. Northport, N.Y., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 24, 1980, Ser. No. 132,940

Int. Cl.³ G01S *3/06*

U.S. Cl. 343—100 LE **10 Claims**



1. A steerable null antenna processor system for receiving desired wave energy signals from at least one angular region of space within the area covered by the system and for suppressing interfering signals from at least one other angular region, comprising:

antenna means having at least first and second antenna elements,

antenna signal path means including combining means coupled between said antenna elements and an output port for supplying said desired wave energy signals to said output port;

nulling means forming part of said antenna signal path means, the nulling means having control inputs and apparatus which responsive to correction signals at the control inputs at least partially cancels said interfering signals from appearing at said output port;

correlator means, a reference path from the antenna signal path means to the correlator means, a feedback path coupled from said output port to the correlator means, said correlator means having apparatus including mixing means to process signals from the reference path and from the feedback path to develop the correction signals and to connections to supply them to said control inputs;

gain control means comprising first gain adjusting means in the reference path, second gain adjusting means in the feedback path, a control circuit, coupling means in the reference path after the first gain adjusting means to supply an input signal to the control circuit, the control circuit being responsive at least to the last said input signal to develop control signals supplied to the first and second gain adjusting means.

4,268,830

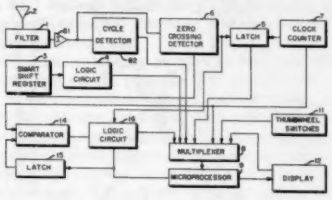
SELF CALIBRATION OF A LORAN-C NAVIGATION RECEIVER

Lester R. Brodeur, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Division of Ser. No. 937,615, Aug. 28, 1978. This application Apr. 9, 1979, Ser. No. 28,143

Int. Cl.³ G01S *1/24*

U.S. Cl. 343—103 **2 Claims**



1. Apparatus for self calibrating a navigation receiver-indicator that includes an internal oscillator/clock and provides navigation information by receiving and utilizing the output of said oscillator/clock to measure differences in the time of arrival of signals periodically transmitted by each of a plurality of pairs of navigation transmitters the signal transmissions from each of which are very accurately controlled on a time basis comprising,

means for entering the periodic rate of transmission of the signals transmitted by each of said navigation transmitter into said receiver-indicator, and

a first means performing the following functions:

a. comparing the time difference between the receipt of successive signal transmissions from one of said transmitters with an output of said oscillator/clock to determine the error in time counts output from said oscillator/clock.

b. interpolating said time count error over the interval between the receipt of successive signal transmissions from said one of said transmitters to get correction counts, and

c. algebraically adding said correction counts to said time counts obtained from said oscillator/clock output before being used for said time difference of signal arrival measurements from said pairs of navigation transmitters to thereby achieve accurate time difference of signal arrival measurements.

4,268,831

ANTENNA FOR SCANNING A LIMITED SPATIAL SECTOR

Pasquale A. Valentino, Glen Head; John C. Herper, Glen Cove, and John J. Stangel, Mahopac, all of N.Y., assignors to Sperry Corporation, New York, N.Y.

Filed Apr. 30, 1979, Ser. No. 34,222

Int. Cl.³ H01Q *19/06*

U.S. Cl. 343—754 **6 Claims**

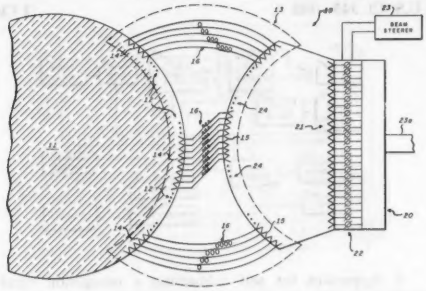
1. A scanning antenna system comprising:

scanning means for scannably directing electromagnetic radiation through a multiplicity of determinable scan angles to corresponding preselected areas of predetermined dimensions in a first focal region;

a first array of antenna elements positioned in said first focal region with uniform spacing therebetween such that at each of said determinable scan angles a multiplicity of said antenna elements within each of said corresponding preselected areas are in an energy coupling relationship with scanning means;

a second array of antenna elements positioned in a second focal region with non-uniform spacing therebetween, said antenna elements of said second array coupled in one-to-

one correspondence to said antenna elements of said first array establishing areas with predetermined variable dimensions in said second focal region corresponding to areas in said first focal region with said non-uniform spacing arranged such that said areas in said second focal region vary as a function of said determinable scan angle, thereby providing a scanned focal region with a scan



variable focal region distribution in said second focal region; and

antenna means having an antenna aperture and a focal region positioned to be substantially coincident with said second focal region for transforming said scanned focal region with said scan variable distribution to a corresponding distribution in said antenna aperture, thereby providing a scan tailored antenna pattern.

4,268,832

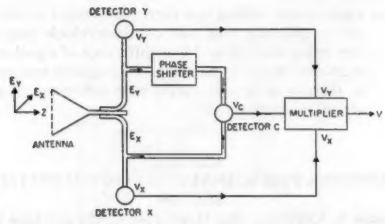
MULTIPATH DISCRIMINATING ANTENNA SYSTEM

J. Robert Christian, Oceanport, N.J., and James W. Mink, Raleigh, N.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 9, 1980, Ser. No. 148,112

Int. Cl.³ H01Q *13/02*; G01S *1/16*

U.S. Cl. 343—786 **6 Claims**



1. Apparatus for receiving elliptically polarized electromagnetic energy comprising:

an antenna means that can maintain separate two orthogonal components of the electric field in the received signal, said components being designated the x-polarized field and the y-polarized field;

directional coupler means coupled to said antenna means to separate said orthogonal components and to split each of them on an equal power basis into first and second parts;

phase shifter means to shift said first part of the y-polarized field by 90 degrees, first detector means coupled to add the output of the phase shifter means to said first part of the x-polarized field and to detect the sum field so that the output of the first detector means is in effect the same as if a circularly polarized antenna were used;

second and third detector means coupled to detect said second parts of the y-polarized and x-polarized fields respectively; and multiplier means coupled to the outputs of the first, second, and third detector means to form the product of the three detected signals to give a resultant output.

4,268,833

BROADBAND SHAPED BEAM ANTENNA EMPLOYING A CAVITY BACKED SPIRAL RADIATOR

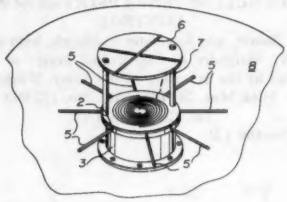
Robert Milne, Ottawa, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Aug. 23, 1979, Ser. No. 69,212

Claims priority, application Canada, Sep. 8, 1978, 310920

Int. Cl.³ H01Q *1/36*

U.S. Cl. 343—833 **11 Claims**



1. An antenna comprising:

(a) a first receiving element comprised of a pair of conductors wound in a spiral,

(b) a conductively walled cylindrical cavity disposed below the spiral having an opening facing the spiral, the diameter of the cavity being similar to the outer diameter of the spiral of conductors,

(c) a plurality of radial elements extending outwardly relative to and in a plane parallel to and below the spiral conductors, orthogonal to the axis of the spiral, and

(d) parasitic element means located parallel with and above the plane of the spiral conductors.

4,268,834

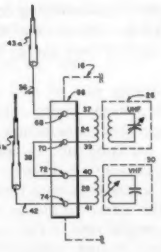
SINGLE UHF/VHF ANTENNA SYSTEM

Ralph A. Henry, Suffolk, Va., assignor to General Electric Company, Portsmouth, Va.

Filed Mar. 24, 1977, Ser. No. 780,858

Int. Cl.³ H01Q *1/50*

U.S. Cl. 343—858 **4 Claims**



1. A single antenna system for the UHF and VHF tuners of a television receiver, comprising:

a single antenna,

UHF tuner input impedance means for coupling UHF signals into said UHF tuner,

VHF tuner input impedance means for coupling VHF signals into said VHF tuner,

UHF input terminals and VHF input terminals, and

interconnecting means including UHF conductors connecting said UHF tuner input impedance means to said UHF

input terminals, VHF conductors connecting said VHF tuner input impedance means to said VHF input terminals, antenna conductor means connecting said single antenna to at least one of said UHF input terminals and a link conductor connecting one of said UHF input terminals to one of said VHF input terminals, said interconnecting means forming a series interconnection of said single antenna, said UHF tuner input impedance means and said VHF tuner input impedance means,

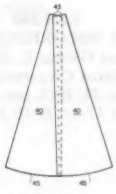
the conductors comprising said interconnecting means being of such length, in particular said VHF conductors being shorter than one quarter wave length at the highest UHF frequency to be received, such that the intrinsic impedance of the UHF tuner impedance means for VHF frequencies and the intrinsic impedance of the VHF tuner input impedance means for UHF frequencies comprise the only crossover network for the single antenna system.

4,268,835

PARABOLIC REFLECTOR

Robert B. Taggart, 348 Ramona Rd., Portola Valley, Calif. 94025

Filed Feb. 4, 1980, Ser. No. 117,993
Int. Cl.³ H01Q *15/16, 15/20*
U.S. Cl. 343—915 **4 Claims**



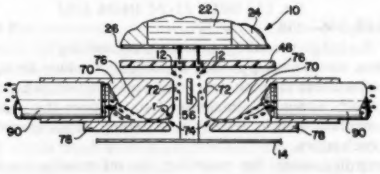
1. In a reflector for high-gain antennae having a plurality of generally planar, triangular electromagnetically reflection petals having a longitudinal axis and rectilinear longitudinal edges, means for connecting adjacent petals in longitudinal edgewise overlapping relation through holes therein at predetermined locations to form a reflector having the shape of a surface of revolution, each petal taking the form along its longitudinal axis of the line that generates the surface of revolutions and having generally curvilinear transverse form, the improvement comprising gradually increasing the overlap of adjacent petals from rim to center of the reflector.

4,268,836

INK JET PRINTER HAVING IMPROVED CATCHER

David A. Huliba, and Lonnie P. Robinson, both of Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Oct. 25, 1979, Ser. No. 88,328
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **24 Claims**



1. An ink jet printer for depositing ink drops from a plurality of jet drop streams on a printing receiving medium, comprising print head means for generating a plurality of jet drop streams directed at said print receiving medium, said jet drop streams positioned in a row,

means for selectively charging drops in said plurality of jet drop streams,

deflection electrode means extending parallel to and to one side of said row of jet drop streams, said deflection electrode means positioned between said means for selectiely charging drops and said print receiving medium,

means for applying a drop deflecting electrical potential to said deflection electrode means to produce a drop deflection field through which said jet drop streams pass, said drop deflection field directing said drops into print and catch trajectories, and

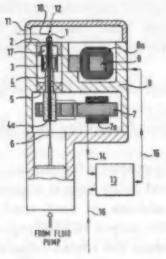
catcher means, extending parallel to said row of jet drop streams and on the opposite side of said row from said deflection electrode means, said catcher means positioned directly opposite said deflection electrode means, for receiving drops in said catch trajectories, while permitting drops in said print trajectories to strike said print receiving medium, said catcher means defining a drop ingesting slot and a plurality of separate internal cavities, each such cavity communicating with an associated portion of said slot.

4,268,837

INK JET RECORDING INSTRUMENT

Günter Orzikowski, Freiburg im Breisgau, Fed. Rep. of Germany, assignor to Hellige GmbH, Freiburg im Br., Fed. Rep. of Germany

Filed Feb. 5, 1980, Ser. No. 118,821
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1979, 2904595
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**



1. An ink jet recording instrument having a capillary tube serving for feeding the writing liquid from a reservoir for the liquid to its bent end which constitutes the exit nozzle for the writing jet and including an electromagnetic driving system for exerting a torque upon the capillary tube which torque is a function of the magnitude of the measuring quantity to be recorded, characterized by a feed back control system for the angular position of the capillary tube comprising the following components:

(a) a measuring value pick-up means (**4**) detecting the angular position of the capillary tube (**6**);

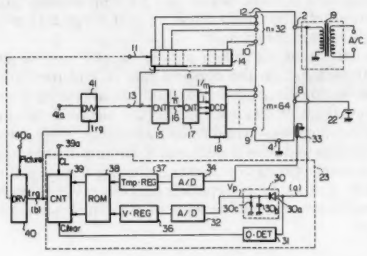
(b) a mechanical-electric transducer (**4***a*, **7**) for converting the angular position into an electrical signal;

(c) a control means to which said electrical signal representing the instantaneous value is supplied to be compared with an electrical value representing the set value of a signal to be recorded; said control means applying an energizing current as the regulated quantity to the energization circuit of the electromagnetic driving system (**3**, **8**) for the capillary tube such that the angular position of the writing end (**1**) of the capillary tube (**6**) does not deviate from the set value which is proportional to the signal to be recorded.

4,268,838
THERMAL RECORDING SYSTEM

Kazuo Nakano; Toshiyuki Iwabuchi, and Ichiji Yamamoto, all of Tokyo, Japan, assignors to OKI Electric Industry Co., Ltd., Tokyo, Japan

Filed Jul. 16, 1979, Ser. No. 57,976
Claims priority, application Japan, Jul. 18, 1978, 53-86772; Jul. 20, 1978, 53-87752
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH **6 Claims**



1. A thermal recording system comprising of:

(a) a thermal head having a plurality of aligned heat-generating resistor elements, in contact with a treated thermal paper with current-holding elements corresponding to each of the heat-generating resistor elements for holding electric current.

(b) means for applying picture information to said heat-generating resistor elements and current-holding elements in accordance with the picture information to be recorded.

(c) a power source for providing periodic electric power to the said thermal head under the control of a control means, characterized in that said control means comprises of;

(i) a peak voltage detector for detecting the peak value of said periodic electric power,

(ii) register means for storing the digital value of said peak value,

(iii) a read-only-memory for storing the table for providing the desired delay time in accordance with said peak value, the address of said read-only-memory being defined by the output of said register means,

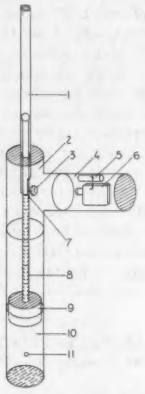
(iv) counter means the initial value of which is provided by the output of said read-only-memory and the content of said counter means is decreased one after another by a predetermined clock pulse, and the output of said counter means controls the power supply to the thermal head.

4,268,839
PHOTO-TIDE LEVEL RECORDER

Jack E. Guth, 630 Oak St., Herndon, Va. 22070

Filed Feb. 1, 1980, Ser. No. 117,651
Int. Cl.³ G01D *9/42*; G01F *23/06*
U.S. Cl. 346—107 R **1 Claim**

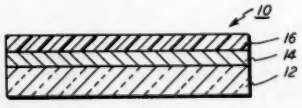
1. A tide level recorder comprises a free floating float with a vertical attached graduated rod-staff, encased in a closed vertical cylindrical tube, which has an orifice near the bottom end of the tube to allow the free flow of water in and out as the tide rises and falls; a fixed index mark near the upper end of the tube for reading the rod-staff graduations as the staff rises and falls with the tide; a recorder opposite the index mark to document the rod-staff graduation readings; and a chronometer to document exact times when rod-staff readings are made.



4,268,840
OPTICAL RECORDING MEMBER

Richard L. Schank, and Gordon E. Johnson, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1979, Ser. No. 61,203
Int. Cl.³ G01D *15/34*; B32B *5/16, 9/04, 15/04*
U.S. Cl. 346—135.1 **13 Claims**



1. An optical recording member for storing data by the selective ablation of a layer of energy absorbing material by laser address comprising a recording layer of an optical energy absorbing material and at least one layer of a polymeric material having a second order glass transition temperature less than 293° K. contiguous to at least one surface of the layer of recording material.

4,268,841
IMAGE RECORDING METHOD AND APPARATUS THEREFOR

Motoharu Fujii, Tokyo; Noboru Koumura, Narashino; Naoki Ayata, Yokohama, and Yasushi Sato, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 28, 1979, Ser. No. 53,089
Int. Cl.³ G01D *15/24*; B65H *5/02*
U.S. Cl. 346—138 **5 Claims**

1. An image recording apparatus, comprising

drum means for supporting a recording medium for cyclical movement to receive recording information, wherein said drum means is dimensioned to support the recording medium with its leading and trailing edges spaced from each other;

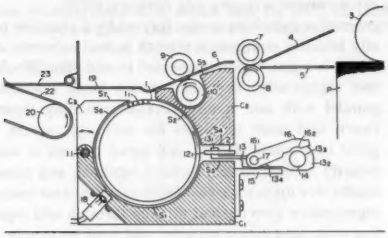
recording means for recording the information on the recording medium;

vacuum means for providing said drum means with a sucking force to hold the recording medium thereon;

guiding means, disposed along and spaced from said drum means, for guiding the recording medium to the periphery

of said drum means, said guiding means being provided with an opening for allowing the recording medium to enter into and to be removed from contact with said drum means;

detecting means for detecting a position between the leading and trailing edges of the recording medium;



separating means for releasing the sucking force after the detection by said detecting means, so that the leading edge of the recording medium faces said opening and said recording medium is passed through said opening in response to centrifugal force, thereby separating the medium from the drum means.

4,268,842

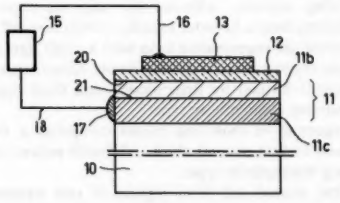
ELECTROLUMINESCENT GALLIUM NITRIDE SEMICONDUCTOR DEVICE

Guy M. Jacob, Pontault, and Michel Boulou, Brunoy, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 829,893, Sep. 1, 1977, abandoned. This application Feb. 16, 1979, Ser. No. 12,790

Int. Cl.³ H01L *33/00*

U.S. Cl. 357—17 **11 Claims**



1. An electroluminescent semiconductor device comprising a monocrystalline substrate, an n-type gallium nitride layer on said substrate, an active gallium nitride layer on said n-type layer and doped to at least full compensation of the natural donor impurities with acceptor impurities, surface electrode means for contacting said active layer, and means for contacting said n-type layer, at least a part of said n-type layer, which part extends parallel to said active layer and adjoins said active layer, being doped to less than full compensation by means of said acceptor impurities, the net concentration of donor impurities being smaller than the concentration of said natural impurities, and the net concentration of donor impurities being substantially homogeneous in said layer portion.

4,268,843

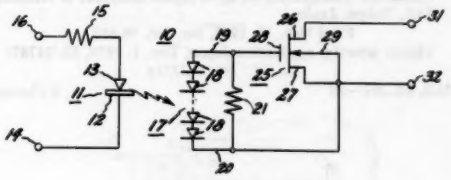
SOLID STATE RELAY

Dale M. Brown; Marvin Garfinkel, both of Schenectady, N.Y., and John A. Laurent, Pittsfield, Mass., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 13,675, Feb. 21, 1979, Pat. No. 4,227,098. This application Jan. 15, 1980, Ser. No. 112,397

Int. Cl.³ H01L *31/12*

U.S. Cl. 357—19 **11 Claims**



1. A solid state relay comprising

a pair of input terminals,

a light-emitting diode connected to said input terminals for generating radiation in response to current applied to said input terminals,

an array of photodiodes series connected between a pair of array electrodes and optically coupled to said light-emitting diode for developing a control voltage across said array electrodes in response to radiation from said light-emitting diode,

a field effect transistor including a pair of current carrying electrodes, a gate electrode and a substrate electrode, one of said array electrodes connected to said gate electrode and the other of said array electrodes connected to said substrate electrode whereby the impedance between said current carrying electrodes has one value in the absence of, and another greatly different value in the presence of said control voltage between said gate electrode and said substrate electrode,

means for providing a large resistive impedance between said gate electrode and said substrate electrode,

a pair of output terminals, each connected to a respective one of said current carrying electrodes.

4,268,844

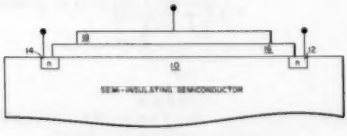
INSULATED GATE FIELD-EFFECT TRANSISTORS

Larry G. Meiners, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 31, 1979, Ser. No. 109,011

Int. Cl.³ H01L *29/78*

U.S. Cl. 357—23 **23 Claims**



1. A normally off, insulated-gate field-effect transistor having low parasitic capacitances, comprising:

a semi-insulating semiconductor substrate;

a source contact and a drain contact spaced apart and disposed on said substrate;

a dielectric layer disposed over said substrate to completely span the space between said source and drain contacts; and

a gate electrode disposed on said dielectric layer to com-

pletely span the space between said source and drain contacts;

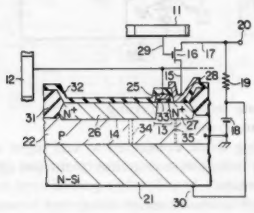
whereby, charge carriers are induced electrically into the space of the semi-insulating substrate between said source and drain contacts by the application of an appropriate voltage to said gate electrode.

4,268,845

SOLID-STATE IMAGING DEVICE

Norio Koike, Tokyo; Shoji Hanamura, Kokubunji, and Masaharu Kubo, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 23, 1979, Ser. No. 96,683
Claims priority, application Japan, Dec. 1, 1978, 53/147871
Int. Cl.³ H01L *27/14*
U.S. Cl. 357—30 **6 Claims**



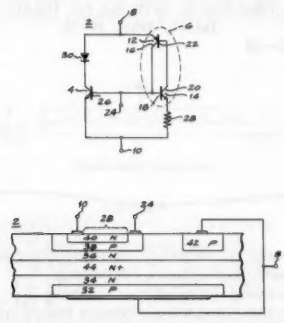
1. In a solid-state imaging device employing, as photoelectric conversion elements, photodiodes each of which consisting of a semiconductor substrate of a first conductivity type, a well region of a second conductivity type formed in the main surface of said semiconductor substrate, and an inpurity region of the first conductivity type formed in said well region, the improvement characterized by applying a voltage for driving said photodiodes to the potential of said semiconductor substrate.

4,268,846

INTEGRATED GATE TURN-OFF DEVICE WITH LATERAL REGENERATIVE PORTION AND VERTICAL NON-REGENERATIVE POWER PORTION

Gordon B. Spellman, Mequon; Herman P. Schutten, Elm Grove, and Stanley V. Jaskolski, Sussex, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Dec. 22, 1978, Ser. No. 972,506
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **3 Claims**



1. A monolithically integrated gate turn-off device comprising:

a pair of main terminals for carrying load current;

a control terminal which enables said device to be turned ON by signal current of one polarity, and be turned OFF by signal current of the opposite polarity;

non-regenerative switching means formed by a plurality of serially vertically contiguous regions in a substrate, and connected between said main terminals for carrying load current when biased into conduction by base drive current, and being non-conductive in the absence of said base drive current whereby said device is OFF;

regenerative switching means formed by a plurality of serially laterally contiguous regions in said substrate one of which is a gate region connected to said control terminal, said regenerative switching means being connected in parallel with said non-regenerate switching means between said main terminals for carrying current when gated into conduction by said signal current of said one polarity applied to said control terminal, and remaining conductive upon removal of said signal current because of regenerative loop current flowing through said regenerative switching means between said main terminals;

said non-regenerative switching means having a base region connected to said regenerative switching means such that part of said regenerative loop current flows to said base region to sustain conduction of said non-regenerative switching means, whereby said device is ON,

said device in said ON state carrying high capacity load current through said non-regenerative switching means between said main terminals, and carrying a small low level holding current through said regenerative switching means between said main terminals, said holding current being of sufficient magnitude to maintain said regenerative loop and also to supply sufficient base drive current to sustain said non-regenerative switching means conductive;

said device being easily turned OFF by a small signal current of opposite polarity applied to said control terminal, which readily renders said regenerative switching means non-conductive because of the low level of said holding current, whereby said base drive current is terminated and said non-regenerative switching means is thus rendered non-conductive and hence terminates load current between said main terminals,

whereby there is provided the combination of a lateral low level regenerative loop, afforded by said regenerative switching means, controlling a vertical higher current carrying capacity, afforded by said non-regenerative switching means, in order to achieve high turn-off gain by breaking the regenerative loop with a small signal,

said non-regenerative switching means comprises a power transistor formed by first, second and third regions of alternating conductivity type;

said regenerative switching means comprises a thyristor formed by first, second, third and fourth regions of alternating conductivity type;

said first, second and third regions of said transistor are common with said second, third and fourth regions, respectively, of said thyristor;

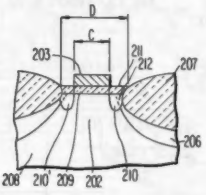
said first region of said thyristor is disposed on a top surface of said substrate and is ohmically connected to one of said main terminals; and

said common fourth region of said thyristor and third region of said power transistor is disposed on said top surface of said substrate and is ohmically connected to the other of said main terminals, and has a laterally extended dimension to provide resistance in the lateral parallel circuit branch containing said thyristor whereby to force most of said load current through the other vertical parallel circuit branch containing said power transistor when said device is in said ON state.

4,268,847
SEMICONDUCTOR DEVICE HAVING AN INSULATED GATE TYPE FIELD EFFECT TRANSISTOR AND METHOD FOR PRODUCING THE SAME

Osamu Kurakami; Shigeru Koshimaru, and Takashi Yamanaka, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 15, 1978, Ser. No. 942,729
Claims priority, application Japan, Sep. 16, 1977, 52-112067; Sep. 16, 1977, 52-112068; Dec. 28, 1977, 52-158000
Int. Cl.[3] H01L *29/34*
U.S. Cl. 357—52 10 Claims



1. A semiconductor device comprising:

a semiconductor substrate of one conductivity type, an isolating region including a field insulator film provided on one major surface of said semiconductor substrate, an active region substantially surrounded with said isolating region, at least one of a source and drain regions of the opposite conductivity type formed in said active region, a channel region in said active region having a first boundary line placed contiguous to said source or drain region and a second boundary line crossing an angle with said first boundary line, a gate insulator film formed on said channel region,

a gate electrode formed on said gate insulator film, and

a first channel stopper region of said one conductivity type in said active region having a higher impurity concentration than said semiconductor substrate and abutting against said isolating region and said second boundary line of said channel region,

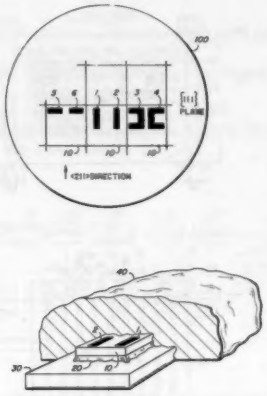
said second boundary line of said channel region being substantially in coincidence with an edge line of said gate electrode.

4,268,848
PREFERRED DEVICE ORIENTATION ON INTEGRATED CIRCUITS FOR BETTER MATCHING UNDER MECHANICAL STRESS

John F. Casey, Colorado Springs, Colo., and Robert L. Vyne, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 7, 1979, Ser. No. 36,725
Int. Cl.[3] H01L *29/04, 29/06, 23/28*
U.S. Cl. 357—60 8 Claims

1. A monolithic semiconductor element comprising a silicon die with first and second major surfaces parallel with a substantially {111} plane; at least two majority carrier devices, said devices having mirror symmetry about a <211> direction in said substantially {111} plane; a supporting substrate for said die; and compliant mounting means for attaching said die to such supporting substrate, whereby approximate matching of characteristics of said devices is preserved despite thermal-

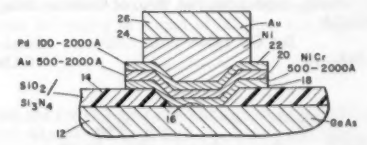


mechanical stress associated with fabrication, handling, test, and use.

4,268,849
RAISED BONDING PAD

Bruce Gray, Southbury, Conn.; James M. Harris, Palo Alto, and William M. Gouin, San Jose, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Nov. 3, 1978, Ser. No. 957,645
Int. Cl.[3] H01L *23/48*
U.S. Cl. 357—71 13 Claims



1. A bonding pad adapted for wafers of III–V compounds comprising in combination:

a first layer of metal contact material consisting essentially of a nickel-chromium alloy bonded to said bonding face, and

a second layer of metal material bonded to said first bonding layer and consisting of a metal selected from the group consisting of gold and palladium.

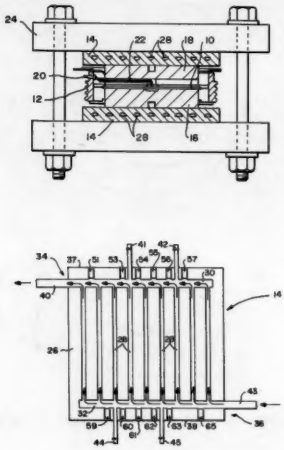
4,268,850
FORCED VAPORIZATION HEAT SINK FOR SEMICONDUCTOR DEVICES

Gerald M. Lazarek, and Fred W. Staub, both of Schenectady, N.Y., assignors to Electric Power Research Institute, Palo Alto, Calif.

Filed May 11, 1979, Ser. No. 38,115
Int. Cl.[3] H01L *25/04, 23/42, 23/44*
U.S. Cl. 357—82 15 Claims

1. A fluid cooled heat sink for use in cooling high power semiconductor devices, comprising: a unitary body formed of thermally conductive material, a plurality of fluid passageways in said body, manifold means communicating with said pas-

sageways, and mechanically movable means cooperating with said manifold means for selectively interconnecting said passageways to provide various fluid-flow configurations through said body.



4,268,851

SIGNAL GENERATOR

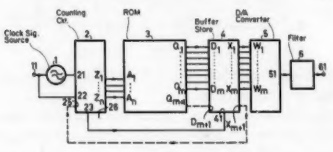
Arthur Heller, Eichenried; Alfred Schaumberger, Olching; Klaus Schuster, Landshut, and Friedrich Dollinger, Munich, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 11, 1979, Ser. No. 38,364

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2821024

Int. Cl.³ H04N 9/62, 7/02

U.S. Cl. 358—10 **6 Claims**



1. A signal generator for synthesizing television test line signal variations having a relatively high frequency and being composed of individual portions, said signal generator comprising

(a) a combination of digital read-only memory means, counting circuit means coupled to the address input of said memory means, a clock signal generator for controlling said counting circuit means, a digital-to-analogue converter coupled to the output of said memory means, and a filter coupled to the output of the converter, the phase of the clock signal generator and of the counting circuit means being synchronized by a television synchronizing signal;

(b) a digital buffer store provided between the digital read-only memory means and the digital-to-analogue converter and having a clock input to which a signal derived from the counting circuit means is applied; whereby

(c) the digital read-only memory means is programmed with a sequence of information words so that distortion on the basis of the transfer properties of the digital-to-analogue converter and of the filter provided behind the converter, respectively, are compensated for.

4,268,852

SYNC GENERATOR FOR A COLOR TELEVISION SYSTEM

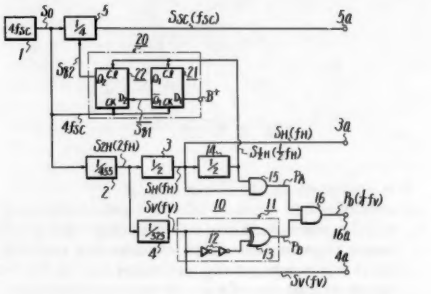
Takashi Nakamura, Hatano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 14, 1979, Ser. No. 102,975

Claims priority, application Japan, Dec. 23, 1978, 53-160590

Int. Cl.³ H04N 9/44

U.S. Cl. 358—17 **14 Claims**



1. A sync generator for a color television system of the type employing a color sub-carrier of a predetermined frequency and a plurality of sequentially repeating color fields comprising:

means for generating a carrier signal having a frequency which is an integral number times said predetermined frequency of the color sub-carrier;

framing signal generating means responsive to said carrier signal for generating a color framing signal synchronized with a predetermined one of each of said plurality of sequentially repeating color fields;

color sub-carrier generating means responsive to said carrier signal for dividing said carrier signal to produce said color sub-carrier of said predetermined frequency; and

means for establishing a fixed phase relation between said color sub-carrier and said color framing signal.

4,268,853

SYNCHRONIZING SIGNAL GENERATOR FOR A PAL TELEVISION SIGNAL PROCESSING SYSTEM

Takashi Nakamura, Hatano, and Akira Taki, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,305

Claims priority, application Japan, Dec. 22, 1978, 53-163810

Int. Cl.³ H04N 9/44

U.S. Cl. 358—17 **13 Claims**

1. A synchronizing signal generator for a PAL television signal processing system of the type employing a plurality of sequentially repeating color fields, a color subcarrier signal having a frequency of f_{SC}, a horizontal synchronizing signal having a frequency of f_h and a vertical synchronizing signal having a frequency of f_v, comprising:

means for providing a reference signal having a frequency of P·f_{SC} (where P is an integer) satisfying the equation:

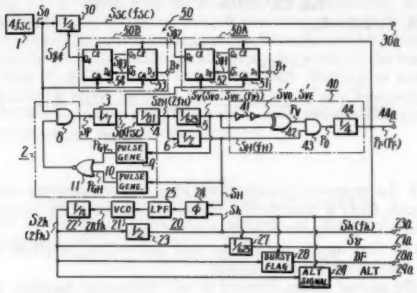
$$f_{SC} = (284 - \tfrac{1}{4} f_h) + \frac{1}{625} f_h$$

$$f_{SC} = \frac{1135}{4} f_h + \tfrac{1}{2} f_v$$

means for dividing said reference signal by P to provide said color subcarrier signal;

means for periodically removing a predetermined number of cycles from said reference signal to produce an offset-free reference signal;

means responsive to said offset-free reference signal for producing said vertical and horizontal synchronizing signals;



means responsive to said offset-free reference signal for generating a color framing signal which identifies a particular one of each of said plurality of sequentially repeating color fields of said PAL television signal; and

means for synchronizing said means for dividing with said color framing signal in response to said reference signal and said offset-free reference signal as well as said color framing signal.

4,268,854

SYSTEM FOR TRANSMITTING CARRIER CHROMINANCE SIGNALS OF COLOR VIDEO SIGNALS

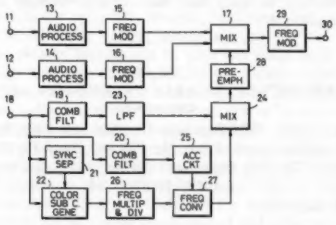
Keiji Ozawa, Yamato, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed May 31, 1979, Ser. No. 44,049

Claims priority, application Japan, Jun. 1, 1978, 53-64898

Int. Cl.³ H04N 9/12

U.S. Cl. 358—27 **6 Claims**



1. A system for transmitting carrier chrominance signals of color video signals comprising:

a signal transmission system having a transmissible optimum level;

means for supplying carrier chrominance signals comprising a carrier chrominance signal component and a color burst signal of the color video signal;

detection means for detecting the level of said supplied carrier chrominance signal to generate a level control signal;

means for controlling a peak level of said carrier chrominance signal in response to the level control signal from said detection means, the peak level continuously becoming a value substantially equal to the transmissible optimum level of said signal transmission system; and

means for sending out the level controlled carrier chrominance signal to said signal transmission system.

4,268,855

NOISE REDUCTION SYSTEM FOR COLOR TELEVISION SIGNAL

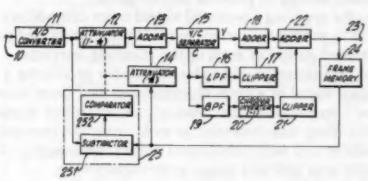
Hiroshi Takahashi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1979, Ser. No. 55,409

Claims priority, application Japan, Jul. 5, 1978, 53-82423

Int. Cl.³ H04N 9/535, 5/21

U.S. Cl. 358—36 **4 Claims**



1. A noise reduction system for reducing noise contained in a television video signal, said system comprising:

memory means for storing the video signal for a period substantially equal to the period of one television frame to produce a stored video signal;

means for recursively adding said stored video signal to a present video signal to produce an added signal;

a comb filter coupled to said adding means and responsive to said added signal for providing a first signal comprised of a luminance signal and a second signal comprised of a chrominance signal and low-frequency components of the luminance signal;

first means coupled to said comb filter and responsive to said second signal for clipping low-level components of said second signal, said first means including second means for clipping low-level components of a high-frequency component included in said second signal; and

means for adding an output of said first means to said first signal.

4,268,856

BEAM INDEX COLOR TELEVISION RECEIVER

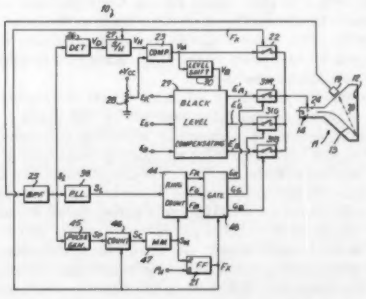
Susumu Akazawa, Sakura, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1979, Ser. No. 78,206

Claims priority, application Japan, Sep. 25, 1978, 53-117617

Int. Cl.³ H04N 9/24

U.S. Cl. 358—67 **12 Claims**



1. A beam index color television receiver, comprising:

a beam index color cathode ray tube including a screen,

means for providing an electron beam adapted to scan said screen during scanning intervals, said screen having an image area and a run-in area contiguous to an edge of said image area and which is scanned by said beam during a predetermined period of each of said scanning intervals, a repetitive pattern of a plurality of groups of color phosphor elements arranged side-by-side across said image area with the elements of each of said groups emitting light of a respective color different from the color of light emitted by the elements of each of the other groups when excited by said beam, index elements spaced apart across said run-in and image areas and emitting radiant energy when excited by said beam, and means responsive to said radiant energy to provide index signals;

means for applying a potential to said color cathode ray tube so as to produce a current in said beam during said predetermined period of each of the scanning intervals;

means responsive to said index signals for producing a controlled signal of a level dependent on said beam current;

means responsive to said level of the controlled signal for controlling said potential so as to maintain constant the levels of said controlled signal during the scanning of said run-in area and said image area, respectively;

means for producing a reference potential which is shifted from the controlled potential in the direction for reducing said beam current; and

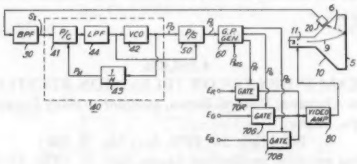
means for applying color signals to said color cathode ray tube with said reference potential as a reference level for the applied color signals during the scanning of said image area.

4,268,857

BEAM INDEX COLOR TELEVISION RECEIVER APPARATUS

Katsuo Isono, Kawagoe, and Tomoyoshi Imayasu, Urawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 12, 1979, Ser. No. 103,092
Claims priority, application Japan, Dec. 14, 1978, 53-155114
Int. Cl.[3] H04N *9/24*
U.S. Cl. 358—67 **12 Claims**



1. Apparatus for controlling color switching in a beam index color television receiver of the type including a cathode ray tube with a display screen having beam-excitable color elements to be scanned by an electron beam as the latter is modulated by color control signals, and index elements which are scanned by said beam as the latter scans said display screen, said apparatus comprising:

means for generating an index signal in response to the scanning of said index elements by said beam;

gating means for sequentially switching said color control signals individually for modulating said electron beam as said beam scans the respective ones of said color elements;

means for generating gating pulses in response to said index signal and for supplying said gating pulses to said gating means so as to cause the latter to switch said respective color control signals, said means for generating and supplying gating pulses including controlling oscillator means for producing first pulses at a frequency which is synchronized with the frequency of said index signal in response to a control voltage varying with changes in said frequency of the index signal and which is applied to said oscillator means; and

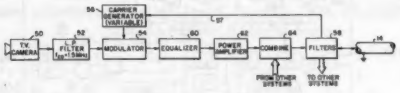
means for shifting the phase of said first pulses in response to variations in said control voltage.

4,268,858

TV TRANSMISSION SYSTEM FOR LONG TOW CABLES

Kenneth E. Wood, Annapolis, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 4, 1977, Ser. No. 774,287
Int. Cl.[3] H04N *7/10, 7/18, 5/30*
U.S. Cl. 358—86 **12 Claims**



1. An improved transmission system for transmitting video signals from a transmitting location to a receiving location over a long electromechanical cable, comprising:

(A) first means, located at said transmitter location, for supplying a carrier signal;

(B) second means, located at said transmitter location, for modulating said video signals onto said carrier signal;

(C) third means, located at said receiver location, for remotely controlling the frequency of said carrier signal;

(D) said first means including

(i) input means for receiving input commands transmitted from said receiver location for providing output control signals in response thereto,

(ii) a biased voltage controlled oscillator providing a nominall correct frequence, f_c,

(iii) circuit means responsive to said output control signals for varying the bias of said voltage controlled oscillator to vary the output frequency thereof;

(E) said circuit means including

(i) an up/down counter,

(ii) means for applying a first control signal to said counter to increment it,

(iii) means for applying a second control signal to said counter to decrement it, and

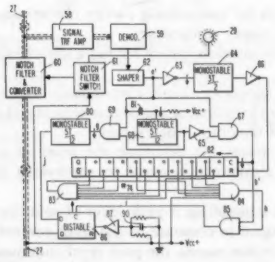
means connected to said counter for converting the count therein into a corresponding voltage and applying said voltage to vary said bias of said voltage controlled oscillator.

4,268,859

HIGH-SECURITY CABLE TELEVISION ACCESS SYSTEM

Clarence S. Ost, 7905 Bayshore Dr., Margate City, N.J. 08402

Continuation-in-part of Ser. No. 798,409, May 19, 1977, Pat. No. 4,161,751. This application Jul. 16, 1979, Ser. No. 58,016
Int. Cl.[3] H04N *7/16*
U.S. Cl. 358—114 **7 Claims**



1. Means for providing, to requesting cable television sub-

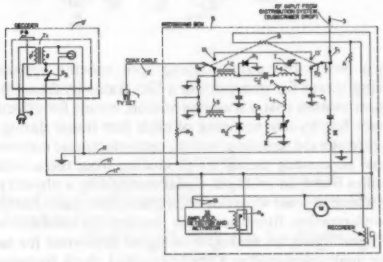
scribers, access to requested program signals transmitted over the cable and via interconnections including tap offs and down leads to the subscribers' television receivers, comprising means for generating a string of clocking pulses corresponding to serial numbering of all the subscribers, means for combining program command pulses with the clocking pulses corresponding to the respective requesting subscribers in the clocking string and thereby producing a program command signal string, means for transmitting the program command signal string via the cable to each of the respective requesting subscribers' tap offs, and means at each requesting subscriber's tap off for separating the command pulses from the clocking pulse string, for identifying such subscriber's pulse solely on the basis of time of arrival thereat coinciding with clocking to such subscriber's serial number, and for utilizing the requesting subscriber's command pulse therein to gate the requested program signals to that television receiver.

4,268,860

TELEVISION SUBSCRIBER APPARATUS

Isaac S. Blonder, Locust, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Sep. 25, 1974, Ser. No. 509,302
Int. Cl.[3] H04N 7/16
U.S. Cl. 358—118 **3 Claims**



1. Television subscriber apparatus having, in combination with a television receiver, subscriber apparatus comprising network trap means tuned to the television picture carrier frequency and having sufficient attenuation when tuned to that frequency to substantially cancel said picture carrier frequency, means for optionally inserting and removing said trap means from the input to the television receiver, thereby to distort the picture signals and to pass the same undistorted, respectively; said trap means comprising voltage-variable impedance means the impedance of which may be changed in response to voltage applied thereto; and means for applying an alternating-current voltage of audio frequency to said variable impedance means while said trap means is inserted in order to produce periodic tuning of the trap means through the picture carrier frequency at the alternating-current audible frequency to effect an audible buzz modulation for masking the sound signal irrespective of temperature-caused and other variations in tuning of the trap means.

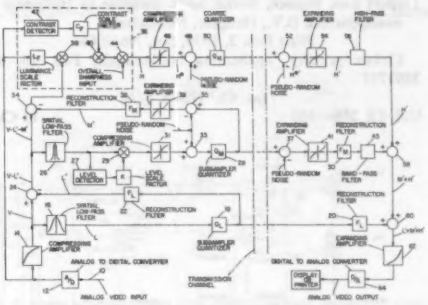
4,268,861

IMAGE CODING

William F. Schreiber, Cambridge, and Donald E. Troxel, Belmont, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Sep. 18, 1978, Ser. No. 943,523
Int. Cl.[3] H04N 7/12
U.S. Cl. 358—138 **34 Claims**

1. Apparatus for coding a digital video signal, comprising:
first means for processing said signal to produce a low-frequency component representative of luminance variations in a first spatial frequency band,
second means for processing said signal to produce a high-frequency component representative of luminance variations in a second spatial frequency band above said first band, and
third means for processing said components to produce a digitally-coded output signal, said third means comprising
means for adding pseudo-random noise to said high-frequency component,
means for quantizing the sum of said high-frequency component and said noise,



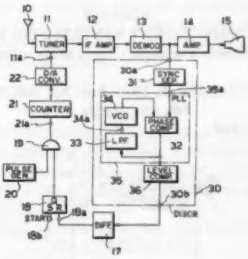
said pseudo-random noise having a maximum peak-to-peak amplitude of one quantization level and a zero mean value, and
means for sampling and quantizing said low-frequency component, said sampling being at a spatial rate lower than that associated with the output of said means for quantizing.

4,268,862

SYNCHRONIZING SIGNAL DETECTOR PARTICULARLY FOR USE IN TELEVISION AFT

Tadao Sasaki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 4, 1979, Ser. No. 72,414
Claims priority, application Japan, Sep. 5, 1978, 53-121192[U]
Int. Cl.[3] H04N 5/08
U.S. Cl. 358—153 **9 Claims**



1. A synchronizing signal detector for detecting a received television synchronizing signal, comprising synchronizing signal separating means supplied with a composite television signal for separating the television synchronizing signal therefrom and operable to pass both an actual synchronizing signal included within said composite television signal and a false synchronizing signal; phase-locked loop means, including an adjustable oscillator to produce an oscillating signal and phase comparison means for adjusting the frequency of said adjustable oscillator to be in synchronism with the output of said synchronizing signal separating means, said phase comparison means producing an error signal as a function of the difference between said oscillating signal and said output of said synchro-

nizing signal separating means, and means for supplying said error signal as a frequency control signal for said adjustable oscillator; and sensing means for sensing said error signal to indicate the presence of said synchronizing signal when said error signal is of predetermined value.

4,268,863

THRESHOLD SELECTION CIRCUIT

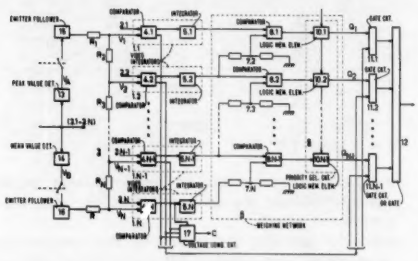
Lindert Los, Rijssen, Netherlands, assignor to Hollandse Signaalapparaten B.V., Hengelo, Netherlands

Filed Feb. 2, 1979, Ser. No. 8,664

Claims priority, application Netherlands, Feb. 16, 1978, 7801727

Int. Cl.³ H04N 5/14

U.S. Cl. 358—160 **11 Claims**



1. Threshold selection circuit suitable for a processing unit for the processing of video signals obtained from an angle tracking device, wherein said threshold selection circuit comprises a number (N) of video integrators which are each fed with the video signals and which are active above respectively differing threshold voltage levels which decrease with the ascending numerical order, 1 to N, of said video integrators, and a weighting network, connected to the video integrators, for selecting the video integrator having the highest threshold voltage level which output signal therefrom does not exceed a fixed fraction of the output signal of the video integrator operating with the next lower threshold voltage level.

4,268,864

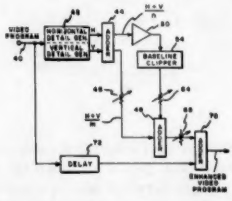
IMAGE ENHANCEMENT SYSTEM FOR TELEVISION

George R. J. Green, Trumbull, Conn., assignor to CBS Inc., New York, N.Y.

Filed Dec. 5, 1979, Ser. No. 100,786

Int. Cl.³ H04N 5/14

U.S. Cl. 358—166 **9 Claims**



1. Apparatus for producing modified detail signals from a video signal, comprising:

means for generating detail signals representative of variations in the amplitude of said video signal;

means for amplifying a first fractional amplitude portion of said generated detail signals;

coring means for truncating a major portion of the amplified signal produced by said amplifying means; and

means for adding a selected fractional amplitude portion of the signal produced by said coring means to a selected fractional amplitude portion of said generated detail signals to produce said modified detail signal.

4,268,865

CONTINUOUS MOTION FLYING SPOT TELECINE

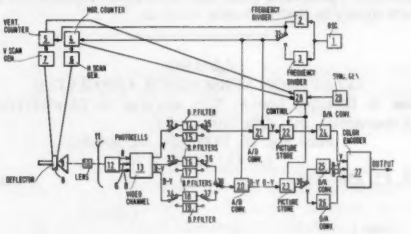
John D. Millward, Hitchin, England, assignor to The Rank Organisation Limited, London, England

Filed Oct. 22, 1979, Ser. No. 86,711

Claims priority, application United Kingdom, Oct. 20, 1978, 41416/78

Int. Cl.³ H04N 3/36

U.S. Cl. 358—216 **6 Claims**



1. In a continuous motion flying spot telecine apparatus comprising means for transporting a film frame-by frame with continuous motion past a scanning station, means for effecting flying spot line-by-line scanning of each film frame during its motion through the scanning station, opto-electronic converter and signal processing means for producing from the scanning of each film frame an analogue signal comprising a plurality of lines of which at least a part of each (the active part) contains picture information, filter means for limiting the bandwidth of the analogue signal, an analogue-to-digital converter for sampling the analogue signal at a predetermined clock frequency, a store for storing digital signals produced by the sampling, and means for reading out the stored digital signals in a predetermined sequence and at a predetermined rate, the improvement comprising means for selectively changing the line frequency of scanning between at least two values without changing the clock frequency, and means for controlling the horizontal deflection speed of the flying spot in such manner that for either line scanning frequency the time taken to derive the active part of each line of the analogue signal corresponds to the same number of clock signals in each case.

4,268,866

PEAK-RESPONSE CONTROLLER FOR AVERAGE-RESPONDING AUTOMATIC IRIS

Robert L. Rodgers, III, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 9, 1979, Ser. No. 93,013

Int. Cl.³ H04N 5/26

U.S. Cl. 358—228 **3 Claims**

1. A drive circuit which operates an automatic iris portion of an automatic iris lens assembly which automatic iris portion responds to the average value of a video signal included in an iris control signal coupled to a control terminal thereof for maintaining a constant amplitude of said video signal, comprising:

image sensing means receiving light from a scene, the intensity of which light is controlled by said iris, said image sensing means producing video signals in response to said light;

detection means including a peak detection mode, said detection means being responsive to said video signals for producing a direct control signal;

integrating means coupled to said detection means for inte-

grating said direct control signal to form an integrated control signal;

wherein the improvement comprises controllable-gain video amplifier means coupled to said integrating means, to said

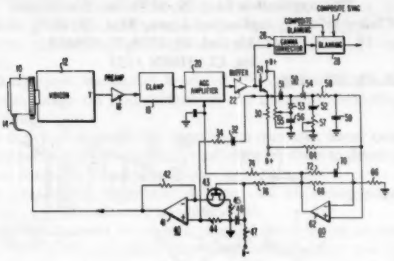


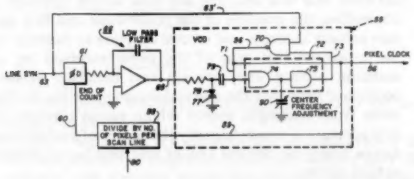
image sensing means and to said control terminal of said automatic iris for controlling the amplitude of video signals applied to said control terminal with a peak responsive mode for providing said averageresponding automatic iris with a peak characteristic.

4,268,867

PIXEL CLOCK FOR SCANNER

James C. Traino, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 29, 1979, Ser. No. 53,604
Int. Cl.[3] H04N *1/04, 1/22*
U.S. Cl. 358—285 **8 Claims**



1. A clock circuit for producing pixel clock pulses for use in clocking out video image signals to the scanning beam modulator of a raster imaging device having detector means for generating signals defining start and end of scan of said scanning beam, comprising in combination:

(a) a clock gate having an inherent operating time delay;

(b) means to input said start and end of scan signals to one input of said clock gate, the output of said clock gate comprising said pixel clock pulses;

(c) a feedback loop for feeding pixel clock pulses output by said clock gate to said clock gate input;

(d) adjustable signal delay means in said feedback loop, the sum of said clock gate time delay and said adjustable signal delay means determining oscillation frequency of said clock gate; and

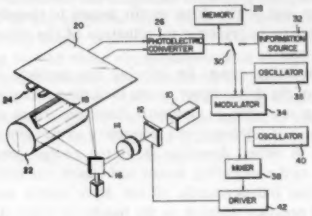
(e) control means responsive to changes in velocity of said scanning beam for regulating said adjustable signal delay means to control the frequency of the pixel clock pulses output by said clock gate in response to variations in scanning beam velocity.

4,268,868

BEAM SCANNING TYPE ELECTRONIC COPYING APPARATUS

Tsuneshi Yokota, Kawasaki, and Toshio Ike, Kamakura, both of Japan, assignors to Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 30, 1980, Ser. No. 117,834
Claims priority, application Japan, Feb. 5, 1979, 54-12062
Int. Cl.[3] H04N *1/04*
U.S. Cl. 358—286 **3 Claims**



1. A beam scanning type electronic copying apparatus comprising:

a light source for generating a light beam;

light beam modulating means for dividing the first order beam of the light beam generated from the light source into first and second diffracted beams according to the frequencies of a drive signal which includes a plurality of frequency components and for modulating the first and second diffracted beams according to the drive signal;

means for scanning the first and second diffracted beams from said light beam modulating means onto a document and recording medium, respectively;

photoelectric converting means for converting a beam reflected from the document based on said first diffracted beam into an electrical signal;

first and second signal generating means for generating first and second constant-amplitude signals of predetermined frequencies;

means for amplitude modulating the first constant-amplitude signal according to the electrical signal from said photoelectrical converting means; and

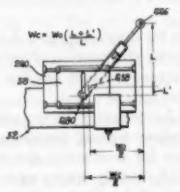
means for mixing an output signal of said amplitude modulating means and said second constant-amplitude signal and for supplying a mixed signal as a drive signal to said light beam modulating means.

4,268,869

ELECTRONIC STENCIL CUTTER HAVING MEANS TO VARY SIZE OF REPRODUCED PICTURE

Arthur J. Heyer, Forest Park; Edward M. Springer, Chicago, and Wallace C. Clay, Oakbrook, all of Ill., assignors to Heyer Inc., Chicago, Ill.

Filed Apr. 10, 1978, Ser. No. 894,528
Int. Cl.[3] H04N *1/10*
U.S. Cl. 358—287 **21 Claims**



1. In a stencil cutting machine, rotatable drum means having means for mounting an original sheet and a stencil sheet

thereon, a carriage having scanning means and reproducing means registrable respectively with said original and stencil sheets, said carriage being guided for movement along the drum means parallel to the axis thereof while the latter is rotating to scan an image on the original sheet while synchronously reproducing said image on the stencil sheet, improved means for moving said carriage along the drum means comprising:

a cable extending along the drum means;

drive motor means;

connecting means connecting the cable respectively to the carriage and to the drive motor means to thereby move the carriage in response to actuation of the drive motor means; and

manual override means for moving the carriage independently of the drive motor means including a handle on the carriage movable in opposite directions from a center position, and release means responsive to movement of the handle in either direction from the center position to release said connecting means and enable the carriage to be moved independently of the drive motor means by manual pressure exerted on the handle in either direction of movement of the handle from the center position.

4,268,870

RECORDING APPARATUS FOR READING INFORMATION FROM AN ORIGINAL

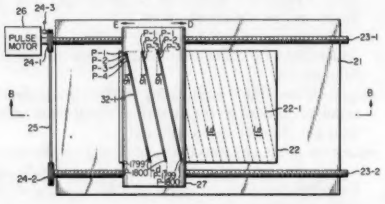
Takashi Kitamura; Hisashi Sakamaki, both of Yokohama, and Naoto Kawamura, Inagi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1979, Ser. No. 33,524

Claims priority, application Japan, Apr. 28, 1978, 53-51850

Int. Cl.³ H04N *1/22, 1/10*

U.S. Cl. 358—296 **18 Claims**



1. An information reading apparatus, comprising:

original support means for supporting an original to be read;

reading means for reading the information from said original supported by said original support means, said reading means including a plurality (n) of arrays, each of which consists of plural reading elements and has a reading range capable of reading a full span, in one direction, of the information of the original, each of said arrays being spaced from an adjacent one a distance obtained by multiplying a minimum interval at which the information is read by k, where k is such an integer that k/n is an irreducible fraction;

displacing means for displacing, in a direction transverse of said one direction, the position of information reading by said reading means on said original supported by said original support means;

detecting means for detecting the amount of displacement of the reading position by said displacing means; and

instructing means for instructing the start of information reading by said reading means upon detection by said detecting means of the displacement of the reading position by a distance obtained by multiplying said minimum interval by n.

4,268,871

SCANNING OPTICAL SYSTEM FOR FORMATION OF A HALF TONE IMAGE

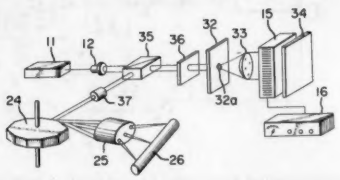
Naoto Kawamura, Inagi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 781,045, Mar. 24, 1977, abandoned. This application May 29, 1979, Ser. No. 43,268

Claims priority, application Japan, Mar. 30, 1976, 51-34797; Apr. 14, 1976, 51-42244; Oct. 20, 1976, 51-125613

Int. Cl.³ H04N *1/22*

U.S. Cl. 358—298 **33 Claims**



1. A scanning optical system to control the formation of a half tone image, which comprises in combination:

(a) a light source;

(b) means defining a first aperture, to restrict a light beam from said light source, and a second aperture;

(c) a first image forming optical system, wherein said light source and said first image forming optical system are provided on opposite sides of said first aperture, and wherein said second aperture is provided at a position optically conjugative with said first aperture relative to said first image forming optical system;

(d) a scanning surface to receive the light beam from said second aperture;

(e) a second image forming optical system interposed between said second aperture and said scanning surface so as to render optically conjugative the position of said second aperture and the position of said scanning surface; and

(f) deflector means composed of a crystal and interposed between said first aperture and said second aperture for controlling the position of the beam from said first aperture projected across said second aperture to thereby vary the cross-sectional area of the beam received by said scanning surface, and wherein said deflector means is positioned such that the spectral image plane for the light beam from said light source which passes through said first aperture is at substantially the center of said deflector means along the optical axis of said first image forming optical system.

4,268,872

MAGNETIC DUPLICATOR WITH MULTIPLE COPIES

Norio Kokaji; Kunio Kinoshita; Toshihiro Urano, and Katsunori Saitoh, all of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed May 14, 1979, Ser. No. 38,823

Claims priority, application Japan, May 15, 1978, 53-64735[U]; Oct. 3, 1978, 53-121805

Int. Cl.³ H04N *1/28;* **G03G** *19/00*

U.S. Cl. 358—301 **23 Claims**

1. A magnetic duplicator comprising an image pickup portion for obtaining an electrical video signal from a document to be copied, a printing portion for printing an image formed from said electrical video signal onto a recording paper, and a control portion for controlling operations of said image pickup portion and printing portion,

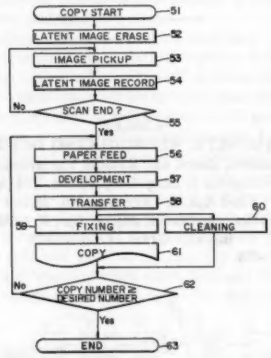
said image pickup portion comprising:

(a) a document support for supporting said document;

(b) a light source for irradiating said document;

(c) an image pickup element for converting light received from said document into said electrical video signal;

(d) an optical means for introducing said light from said document onto said image pickup element; and
(e) a secondary scanning means for moving said image pickup element relative to said document so as to scan said document;
said printing portion comprising:
(f) a magnetic recording medium which has a surface for forming a magnetic latent image, said surface being able to move and having specific resistivity less than 10^{12} ohm-cm;
(g) a magnetic recording head for forming said magnetic latent image on said surface of the magnetic recording medium;
(h) a developing means for supplying a magnetic toner onto said surface of the magnetic recording medium to develop said magnetic latent image;
(i) a transporting means for moving said recording paper along a predetermined transport path;
(j) a transfer means for transferring the toner image on said surface of the magnetic recording medium onto said recording paper while said surface of the magnetic recording medium moves and said recording paper is moved along said transport path;
(k) means for applying electrostatic field between said magnetic recording medium and said transfer means so as to aid the transferring of said toner image;



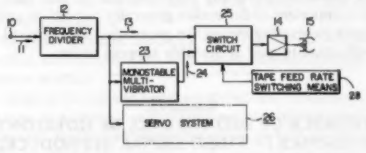
(l) a fixing means for fixing said transferred toner on said recording paper;
(m) a cleaning means for cleaning the remaining toner on said surface of the magnetic recording medium after the transfer, said cleaning means including a cleaning blade and an air suction means; and
(n) a pulse generating means for generating pulses in synchronization with the movement of said surface of the magnetic recording medium; and
said control portion comprising:
(o) a copy register for presetting the desired number of copies;
(p) a copy counter for counting the number of the obtained copies;
(q) a comparator for comparing the set number of said copy register with the counter value of said copy counter, said comparator generating a copy end signal when the counted value reaches the set number; and
(r) a control means which operates first for latent image forming mode and then operates for copy mode, with actuation of a copy switch, the operation for copy mode being repeated without returning to the latent image forming mode until said copy end signal is generated from said comparator, and the operations for latent image forming mode and copy mode being effected in accordance with the timing of said pulses;
where during said latent image forming mode, the light from said document is converted into the electrical video signal by said image pickup element, said electrical video signal is recorded on said surface of the magnetic recording medium to form said magnetic latent image thereon by said magnetic recording head, and said electrical video signal is read out from said image pickup element in accordance with the timing of said pulses so as to effect said movement of the magnetic recording medium and said read-out of the image pickup element in a predetermined relationship; and
where during said copy mode, the magnetic latent image on said surface of the magnetic recording medium is developed by the magnetic toner from said developing means, the toner image is transferred onto said recording paper being moved along the predetermined transport path by said transfer means, the transferred magnetic toner is fixed on said recording paper by said fixing means, and the remaining magnetic toner on said surface of the magnetic recording medium after the transfer is removed for next development by said cleaning means.

4,268,873

SERVO CIRCUIT FOR ROTARY HEADS OF A VIDEO TAPE RECORDER

Yasunori Kobori; Toshi Itoh, both of Katsuta; Yoichi Tokunaga, Mito, and Tunehiko Teshima, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 6, 1979, Ser. No. 63,711
Claims priority, application Japan, Aug. 9, 1978, 53-96220
Int. Cl.³ H04N *5/785*
U.S. Cl. 360—9 **5 Claims**



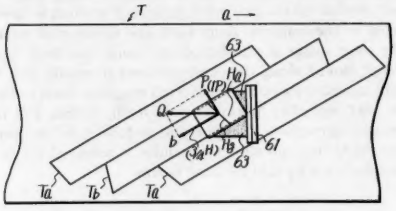
1. A servo circuit for a video tape recorder which comprises two rotary heads of helical scan type for forming a multiplicity of oblique recording tracks on a magnetic tape, and means for selectively changing over the magnetic tape feed rate with which recording/reproduction is performed between at least two values, each of said recording tracks being formed superimposed partially on the previously-formed recording track on the magnetic tape when the recording is performed with the lower one of the at least two tape feed rates, thereby causing each recording track to be narrower than the width of each of the heads, said servo circuit comprising:
means for generating a first control signal in synchronism with a vertical synchronizing signal extracted from the video signal to be recorded;
means for recording said first control signal on a control track of the magnetic tape;
means for controlling the rotational phase of said rotary heads by the first control signal read from the control track of said magnetic tape at the time of reproduction;
means for generating a second control signal having a phase shifted by predetermined amount from the phase of said first control signal; and
means interlocked with said magnetic tape feed rate switching means for recording said second control signal in place of said first control signal when the lower feed rate of said magnetic tape is selected.

4,268,874

TRANSDUCER DEFLECTION APPARATUS FOR USE IN A VIDEO SIGNAL REPRODUCING DEVICE

Kazuo Yamagiwa; Masatoshi Kamakur, both of Tokyo, and Toshihiko Numakura, Kamakura, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,924
Claims priority, application Japan, Mar. 6, 1978, 53-25136
Int. Cl.[3] H04N *5/78;* G11B *21/10, 21/18*
U.S. Cl. 360—10 11 Claims



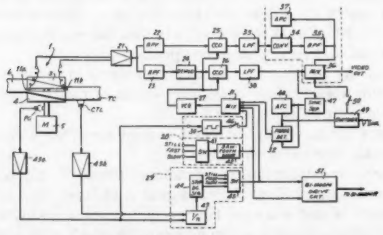
1. An apparatus for reproducing a video signal recorded in successive skewed tracks on a recording medium comprising: signal reproducing means for reproducing said video signal; rotary means for moving said signal reproducing means along a path generally parallel to said skewed tracks; deflectable support means responsive to a control signal for deflecting said signal reproducing means in a single composite direction with respect to said rotary means; means for mounting said deflectable support means on said rotary means at a predetermined non-perpendicular angle relative to said path along which said signal reproducing means is moved, such that said single composite direction is at a first angle relative to the perpendicular direction of said path and at a second angle relative to the longitudinal direction of said path so as to have a first component of deflection generally perpendicular to said path and a second component of deflection generally parallel to said path; and signal generating means for generating said control signal for application to said deflectable support means.

4,268,875

AVOIDANCE OF DISTURBANCE OF HORIZONTAL SYNC SIGNALS IN VIDEO SIGNAL REPRODUCED AT OTHER THAN STANDARD TAPE SPEED

Minoru Morio; Masahiro Kambara, both of Tokyo; Yukio Kubota, Takaidonishi, and Keitaro Yamashita, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,515
Claims priority, application Japan, Apr. 19, 1978, 53-46114
Int. Cl.[3] H04N *5/78*
U.S. Cl. 360—10 14 Claims



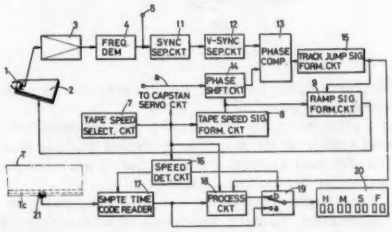
3. In a recording and reproducing apparatus in which a video signal is recorded by at least one rotary head in successive parallel tracks on a recording medium while the latter is being driven at a predetermined speed in a direction to which said tracks extend at a predetermined angle, and in which the recorded video signal can be reproduced by said rotary head repeatedly scanning the recording medium while the latter is driven at a selected arbitrary speed ranging from zero speed to at least said predetermined speed; the combination of an electro-mechanical transducer supporting said rotary head and being effective, in response to an electrical drive signal, to displace said rotary head in directions generally transverse to the direction along said tracks, drive circuit means for providing said drive signal so as to compensate for deviations of the scanning path of said rotary head from said tracks resulting from said arbitrary speed during reproducing being selected as other than said predetermined speed, variable delay means operative during reproducing when said arbitrary speed is selected as other than said predetermined speed for variably delaying the video signal reproduced by said rotary head, and control means responsive to the selected arbitrary speed other than said predetermined speed for controlling the amounts by which said variable delay means delay the reproduced video signal in accordance with said selected arbitrary speed to cause fields of the reproduced video signal which are contiguous in point of time to be continuous in the delayed video signal and to contain respective horizontal synchronizing signals which are in predetermined phase relationships to each other.

4,268,876

MAGNETIC REPRODUCING DEVICE

Hitoshi Sakamoto, Zama, and Ryuichi Yamayoshi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 2, 1979, Ser. No. 26,249
Claims priority, application Japan, Apr. 8, 1978, 53-41616
Int. Cl.[3] G11B *21/08, 15/18*
U.S. Cl. 360—78 8 Claims



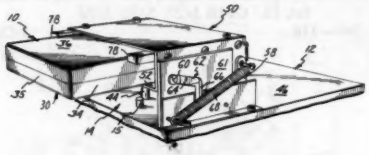
1. A magnetic reproducing device for use with a magnetic tape having signals recorded thereon in parallel tracks which extend obliquely in respect to the longitudinal direction of the tape comprising means for moving said tape at a selected speed in said longitudinal direction; a magnetic head for scanning said tracks so as to reproduce the respective signals recorded therein; deflecting means for deflecting said magnetic head in directions extending transversely to the direction along each of said recorded tracks: means for supplying a first drive signal to said deflecting means for positioning said magnetic head to repeat the scanning of one of said tracks; means for selectively supplying a second drive signal to said deflecting means for positioning said head to scan the next desired one of said tracks, and counting means for counting said second drive signals as a measure of the distance said tape is moved in said longitudinal direction, which measure is accurate independently of said selected speed.

4,268,877

RECORDING AND/OR PLAYBACK MACHINE WHICH AFFORDS USE OF VARIOUS SIZED MAGAZINES

Alfred H. Moris, and Steven S. Wysocki, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 23, 1979, Ser. No. 23,302
Int. Cl.[3] G11B *23/06, 15/70*
U.S. Cl. 360—94 **6 Claims**



1. A magazine adapted to be received at a station having spaced side guide members for receiving a portion of the magazine therebetween, said magazine comprising:

a generally cylindrical hub portion;

an endless length of strip material having a major portion wound in a coil about the hub portion and a minor portion extending from the innermost wrap of the coil along a path around the side surface of the coil to the outermost wrap of the coil; and

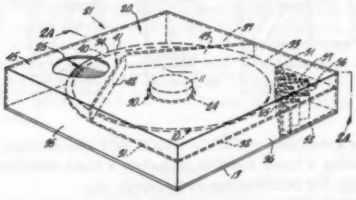
a case including a first case portion enclosing said path for the strip material around the side surface of the coil and comprising opposite first side wall portions positioned on opposite sides of said path for the strip material around the side surface of the coil, said first side wall portions being spaced at a predetermined distance and having outer surfaces adapted to engage and be positioned by the side guide members at a said station to provide lateral positioning of said magazine relative to said station; and a second case portion enclosing said coil and hub and comprising opposite second side wall portions generally parallel with said first side wall portions on opposite sides of said hub and coil and spaced farther apart than said first side wall portions to afford clearance space for said coil.

4,268,878

GAS CIRCULATION AND FILTRATION APPARATUS FOR MAGNETIC DISC RECORDING SYSTEMS

William J. Kearns, Costa Mesa, Calif., assignor to New World Computer Company, Inc., Costa Mesa, Calif.

Filed Jun. 1, 1979, Ser. No. 44,533
Int. Cl.[3] G11B *23/02, 25/04, 5/82*
U.S. Cl. 360—97 **15 Claims**



1. A gas circulation and filtration apparatus for use with a magnetic disc recording system, said system including a rotating disc having a first side and an outer edge, comprising:

a control surface adapted to be disposed parallel to said first side and spaced therefrom a substantially small distance to cause gas flow therebetween to be substantially laminar, said control surface having an opening formed therein adapted to be concentric with the center of said rotating disc, said control surface and said opening formed therein, said first side, and said outer edge defining an annular region;

a first gas chamber in communication with said annular region at said control surface opening;

a second gas chamber in communication with said annular region at the outer edge of said rotating disc; and

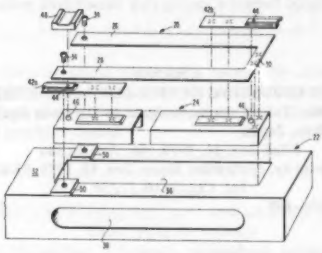
filter means intermediate said first and second gas chamber for allowing gas flow between said gas chambers through said filter.

4,268,879

SUSPENSION FOR AIR BEARING HEAD ARM ASSEMBLY

Robert B. Watrous, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1979, Ser. No. 36,614
Int. Cl.[3] G11B *5/48, 21/24*
U.S. Cl. 360—104 **8 Claims**



1. A magnetic head arm suspension assembly for supporting a flying head comprising:

a hollow box-like arm having a flat planar surface and a recess therein;

a load beam element matingly seated in a close fit relation within said recess, said load beam element having a flat planar surface;

a U-shaped flat planar resilient spring the cross-arm of said spring attached to said planar surface of said load beam element, and the other end attached to said planar surface of said arm; and

first and second magnetic transducers mounted respectively at each end of said planar surface of said load beam and adjacent to said one end and said other end of said spring on either side of the center lines of said load beam and said spring for translation in a direction orthogonal to said flat planar surface of said arm while the transducers move in a parallel relationship.

4,268,880

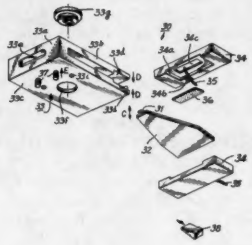
MAGNETIC HEAD ASSEMBLY

Osamu Majima, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,849
Claims priority, application Japan, Feb. 10, 1978, 53-15773[U]
Int. Cl.[3] G11B *21/10, 21/04, 5/54*
U.S. Cl. 360—109 **15 Claims**

1. A magnetic head assembly comprising a deflectable piezoelectric member adapted for deflection in response to a voltage applied thereto; a magnetic head mounted on one end of said piezo-electric member; a U-shaped protective holder for supporting said piezo-electric member, said U-shaped holder being formed of resilient material and having a base from which a pair of legs extend with free ends of said legs being spring biased toward each other and with sand base having a window therein; said piezo-electric member extending between said legs with said one end protruding through said window and with the end of said piezo-electric member remote

from said one end thereof being positioned between and clamped by said spring biased free ends of said legs of said U-shaped holder; and means for applying a voltage to said



piezo-electric member at said remote end thereof, said means being clamped between said spring biased free ends of said legs.

4,268,881

AZIMUTH ADJUSTING DEVICE FOR MAGNETIC HEAD

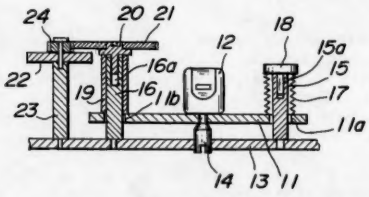
Shoichi Saito, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,386

Claims priority, application Japan, Jun. 15, 1978, 53-82114[U]

Int. Cl.[3] G11B *21/24*

U.S. Cl. 360—109 **4 Claims**



1. In an azimuth adjusting device for a magnetic head, the magnetic head having a center axis, including a head fitting plate for supporting the magnetic head, a support for mounting said head fitting plate so that the magnetic head is in operative relationship with a magnetic tape moving in a first plane substantially perpendicular to the center axis of the magnetic head, and an azimuth adjusting screw arranged for rotation about its axis on said support for adjusting the azimuth of the magnetic head in the first plane, the improvement comprising means on said support for pivoting the head fitting plate about an axis substantially parallel to the center axis of the magnetic head, spring means on said support for applying a bias force to said head fitting plate in a direction substantially parallel to the axis of said azimuth adjusting screw, said azimuth adjusting screw is arranged on said support to apply an azimuth adjusting force to said head fitting plate to counter the bias force applied to said head fitting plate by said spring means so that the azimuth of the magnetic head can be adjusted in accordance with rotational movement of said azimuth adjusting screw, said spring means and said azimuth adjusting screw applying said bias force and said azimuth adjusting force to said head fitting plate at locations along a line substantially perpendicular to the center axis and on different sides of the magnetic head, a first gear wheel of relatively large diameter coaxially fixed to said azimuth adjusting screw, and a second gear wheel mounted on said support in meshed engagement with said first gear wheel for transmitting rotational movement to said azimuth adjusting screw, said second gear wheel having a diameter smaller than that of said first gear wheel so that said azimuth adjusting screw can be finely adjusted to set the azimuth of the magnetic head in the first plane.

4,268,882

MAGNETIC ERASING HEAD

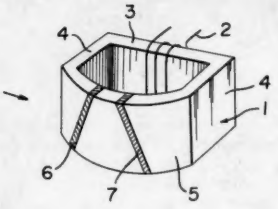
Kazumasa Fukuda, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 19, 1979, Ser. No. 95,503

Claims priority, application Japan, Dec. 1, 1978, 53-147848

Int. Cl.[3] G11B *5/27, 5/25, 5/12*

U.S. Cl. 360—118 **3 Claims**



1. A magnetic erasing head comprising:

a head formed of a highly permeable substance having two or more gaps of uniform thickness formed on a front part thereof;

a spacer made of a non-magnetic substance disposed in each of said gaps and extending from one side to the other of said front part of said head wherein an angle of one of said gaps to a transit direction of a magnetic tape is an acute angle and an angle of the other gap to the transit direction of the magnetic tape is an obtuse angle.

4,268,883

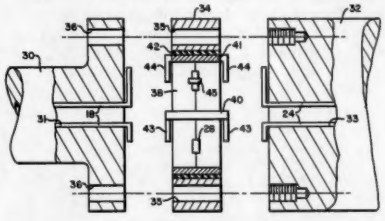
REVERSE VOLTAGE PROTECTION FOR BRUSHLESS EXCITATION SYSTEMS

Sheppard J. Salon, Pittsburgh, and Lon W. Montgomery, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 23, 1978, Ser. No. 953,654

Int. Cl.[3] H02K *19/00*

U.S. Cl. 361—21 **17 Claims**



1. In a brushless excitation system for a synchronous generator having a rotor member including a shaft carrying a field winding, the combination comprising:

an alternating current exciter having an armature winding carried on an exciter shaft having a central bore and rotatable with said rotor member;

a rectifier assembly rotatable with the rotor member and connected to said armature winding;

means for connecting the rectifier assembly to said field winding to supply direct current excitation thereto; and

switching means responsive to the voltage across the field winding for shunting the field winding in response to voltage exceeding a predetermined value;

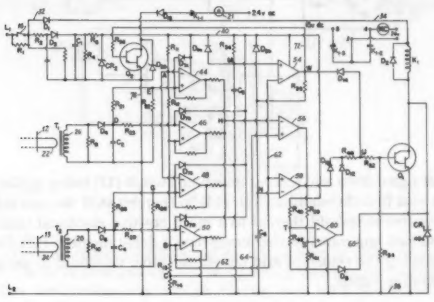
said switching means mounted within said bore.

4,268,884

CURRENT SENSING CIRCUIT

John R. Ford, Jr., and Harold D. Leipold, both of Princeton, Ind., assignors to AMF Incorporated, White Plains, N.Y.

Filed May 7, 1979, Ser. No. 36,629
Int. Cl.³ H02H *3/093, 7/085*
U.S. Cl. 361—22 **14 Claims**



1. A current sensing circuit for detecting an undesired current condition in a current distribution system, wherein the distribution system includes disconnecting means for disconnecting a load from the distribution system when an undesired magnitude of current is sensed, comprising

sensing means coupled to a line of the distribution system for sensing the magnitude of current flowing in said line and for producing a sensing signal in response thereto,

comparing means for comparing said sensing signal with a reference signal that corresponds to a limit of the magnitude of acceptable current in said line,

said comparing means producing a first signal when the magnitude of said sensing signal is within a predetermined limit and producing a second signal when the sensing signal is outside the predetermined limit,

means including controllable conduction means responsive to the presence of said first signal for operating said disconnecting means to connect a load to the distribution system, and responsive to the presence of said second signal to operate the disconnecting means to disconnect the load from the distribution system,

first delay means operable only in response to each energization of the current sensing circuit for delaying the operation of the controllable conduction device for a first delay period, and

second delay means operable only on each energization of the circuit at the conclusion of the first delay period and after the controllable conduction means responds to said first signal for preventing the further operation of the controllable conduction means for the duration of a second delay period, whereby said disconnecting means cannot be operated to disconnect the load from the distribution system until the conclusion of the second delay period.

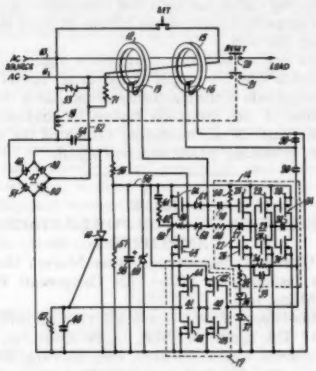
4,268,885

GFI SENSOR CIRCUIT

Malcolm Williams, Orinda, Calif., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Aug. 2, 1979, Ser. No. 62,956
Int. Cl.³ H02H *3/28*
U.S. Cl. 361—45 **8 Claims**

1. A ground fault interrupter circuit comprising means for sensing the occurrence of a ground fault condition in a power line and for producing a ground fault signal upon the sensing of a ground fault condition, means coupled to said sensing means for amplifying said ground fault signal, and switching means operatively connected to said amplifying means and actuated by the application thereto of an amplified ground fault signal, said amplifier means comprising a plurality of series-connected



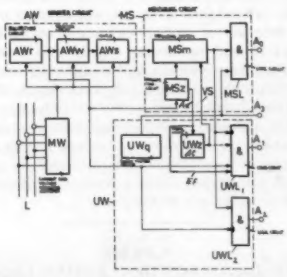
CMOS inverter stages and means operatively connected to said amplifier means for biasing said inverter stages at a transitional phase of operation so as to provide a predetermined gain for said amplifier means.

4,268,886

DISTANCE PROTECTION APPARATUS FOR ELECTRICAL LINES

Ivan De Mesmaeker, Fislisbach, Switzerland, assignor to BBC Brown, Boveri & Co., Ltd., Baden, Switzerland

Filed Sep. 20, 1978, Ser. No. 943,955
Claims priority, application Switzerland, Sep. 30, 1977, 11956/77
Int. Cl.³ H02H *7/26*
U.S. Cl. 361—80 **5 Claims**



1. A distance protection apparatus for electrical lines, comprising:

a starter circuit having an output and containing an excitation circuit responsive to at least one predetermined fault criterion appearing at least at one of the electrical lines;

at least one measuring circuit having a characteristic in the complex impedance plane which can be switched at least in sections between a number of distance trip boundaries and having at least one linear section which extends at least approximately through the null point of the impedance plane;

said measuring circuit having an output side and containing a measuring system;

said measuring circuit further having a switching stage for the greatest zone boundary;

said switching stage constituting an end stage whose linear trip boundary extending through the null point of the impedance plane is located externally of the load range of the electrical line;

a monitoring circuit having a first comparison logic means, said comparison logic means having an input side and an output side; and

the input side of said first comparison logic circuit being connected with the output of the starter circuit and with the output side of the measuring circuit and in the event of response of the excitation circuit in conjunction with non-response of the measuring system of the measuring circuit producing a fault function signal.

4,268,887

PROTECTIVE SYSTEM FOR POWER STAGE OF IC AMPLIFIER

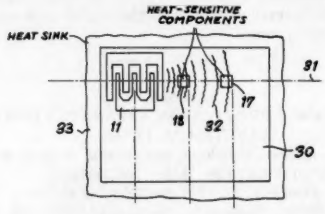
Giovanni Ghiringelli, Segrate, and Bruno Murari, Monza, both of Italy, assignors to SGS-ATES Componenti Elettronici S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 862,355, Dec. 20, 1977, Pat. No. 4,157,513. This application Mar. 30, 1979, Ser. No. 25,539

Claims priority, application Italy, Dec. 21, 1976, 30659 A/76

Int. Cl.[3] **H02H** *5/04;* **H03F** *3/04*

U.S. Cl. 361—93 **5 Claims**



1. In integrated circuitry comprising a power element connected across a load by way of a series resistor, and a normally inactive protective circuit including a monitoring transistor with input electrodes connected across said series resistor for limiting the current flow in said power element in response to a voltage drop across said series resistor exceeding a normal value by which said monitoring transistor is biased to cutoff,

the improvement wherein said monitoring transistor has a temperature-dependent conduction threshold and is disposed together with said power element on a semiconductor chip, juxtaposed with a heat sink, at a distance from said power element close enough to enable a significant lowering of said conduction threshold by a heat surge through said power element having a minimum duration on the order of one millisecond.

4,268,888

APPARATUS FOR GENERATING ENGINE SPEED-DEPENDENT IGNITION CONTROL SIGNALS

Bernd Bodig, Leinfelden-Echterdingen, and Werner Jundt, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

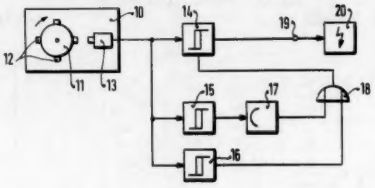
Filed Aug. 15, 1979, Ser. No. 66,862

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1978, 2842998

Int. Cl.[3] **F02B** *5/02*

U.S. Cl. 361—236 **7 Claims**

1. An apparatus for generating control signals based on the output signal from a rotary transducer, especially for controlling the ignition system of an internal combustion engine, said apparatus including a transducer (**10**) having a rotary portion for generating an output signal which is at least dependent on angle of rotation and further including a principal threshold switch (**14**) having a first, positive threshold which, when exceeded by said transducer signal, causes said primary threshold switch to assume a first state and having a second, negative threshold which, when crossed by said transducer signal, causes said primary threshold switch to assume a second state, and wherein, according to the invention, said apparatus comprises a second threshold switch (**15**) having a positive activation threshold and a positive de-activation threshold, the out-



put signal from said second threshold switch (**15**) being applied to said first threshold switch (**14**) to thereby shift the second, negative threshold thereof to a more positive electrical value and said apparatus further comprises a delay member (**17**) for delaying the return of said second negative threshold to more negative values.

4,268,889

ROTARY DISPLACEMENT CAPACITIVE TRANSDUCERS

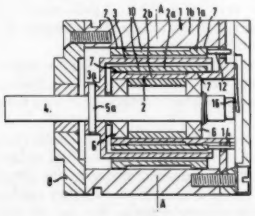
Peter C. F. Wolfendale, Bletchley, England, assignor to Automatic Systems Laboratories Limited, Bedfordshire, England

Filed Jun. 4, 1979, Ser. No. 45,456

Claims priority, application United Kingdom, May 31, 1978, 25932/78

Int. Cl.[3] **H01G** *5/04*

U.S. Cl. 361—292 **9 Claims**

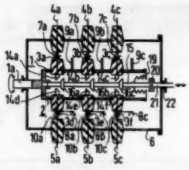


1. A rotary displacement capacitive transducer comprising a first cylindrical electrode having a longitudinal axis, a second cylindrical electrode surrounding said first electrode and supported about said longitudinal axis to provide an annular gap between said first and second cylindrical electrodes, at least one of said cylindrical electrodes being divided into axially extending arcuate segments, means for insulating said segments from one another, and a part cylindrical screen mounted on a shaft rotatable about said longitudinal axis, said part cylindrical screen extending along and being movable about said longitudinal axis through said annular gap when said shaft rotates, the rotating movement of said part cylindrical screen being operable to vary a capacitance coupling between said inner and outer cylindrical electrodes whereby the capacitance of the capacitive coupling is indicative of the angular position of said shaft.

4,268,890
BREAKER COMBINATION FOR BUS BAR INSTALLATIONS

Erich Silbermann, Bubenreuth, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,562
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1978, 2818914
Int. Cl.³ H02B *1/04*
U.S. Cl. 361—335 **16 Claims**



1. In a breaker combination for connecting at least one bus bar with at least one branch in a plural phase bus bar installation, the breaker combination having, in at least one phase of the installation,

a fixed tube and a rotatable shaft axially disposed in the tube; stationary counter-contacts disposed around the inner circumference of the tube, there being at least one counter-contact connected with one bus bar and one counter-contact connected with a branch; and

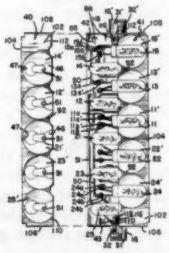
at least two contact studs disposed on an arc of a circle on the shaft and an electrical interconnection between the studs, whereby rotation of the shaft will electrically connect at least one contact stud to one counter-contact, the improvement in which:

the shaft comprises a hollow switching tube and a power circuit breaker contained in the hollow switching tube, the power circuit breaker having a set of contacts connected in series with the interconnection between the contact studs, the power circuit breaker being operable to open the contacts and disconnect the studs from each other.

4,268,891
MULTILAMP PHOTOFLASH UNIT HAVING GROUNDED REFLECTOR

Boyd G. Brower, Williamsport; Ronald E. Sindlinger, Muncy, and James L. Holmes, Montoursville, all of Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Sep. 13, 1978, Ser. No. 941,875
Int. Cl.³ G03B *15/02*
U.S. Cl. 362—11 **10 Claims**

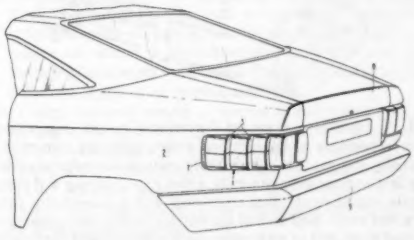


1. A photoflash unit comprising a plurality of electrically ignitable flashlamps each having a pair of lead-in wires, a circuit board having circuitry disposed on a surface thereof for selectively igniting said flashlamps, said flashlamps being positioned over said surface, means electrically connecting the lead-in wires of said flashlamps to said circuitry, said circuitry including a common circuit conductor connected electrically to one lead-in wire of each of said flashlamps, said common circuit conductor including an enlarged conductive area on said circuit board, an electrically conductive reflector unit positioned between said lamps and said circuit board and shaped to reflect light from said lamps when flashed, said reflector unit including a sidewall portion vertically aligned with said enlarged conductive area, and means for providing a low voltage electrical path between said conductive reflector unit and said common circuit conductor, said last-mentioned means comprising a dried paste of electrically conductive material disposed between the edge of said sidewall portion of the conductive reflector unit and said enlarged conductive area on the circuit board.

4,268,892
DIFFUSION LENS FOR REAR LIGHTS OF VEHICLES, ESPECIALLY MOTOR VEHICLES

Peter Pfeiffer, and Johann Tomforde, both of Sindelfingen, Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Oct. 15, 1979, Ser. No. 84,536
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844822
Int. Cl.³ B62D *23/00*; B60Q *1/00*
U.S. Cl. 362—83 **6 Claims**



1. A diffusion lens for rear lights of vehicles, which diffusion lens is drawn about the vehicle rear section and far into the area of the side wall of the vehicle, characterized in that the diffusion lens includes within said area of the side wall of the vehicle step-shaped offsets—as viewed in plan view—in such a manner that individual light exit surfaces are formed that are disposed approximately in vehicle transverse planes.

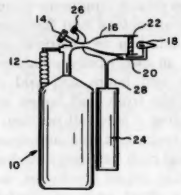
4,268,893
ILLUMINATION APPARATUS FOR USE IN AN OBSCURED AMBIENT, FLUID CONDUIT AND METHOD

Roy M. Harrigan, Bromley Mountain Rd., Manchester, Vt. 05254

Continuation of Ser. No. 762,498, Jan. 26, 1977, abandoned. This application Oct. 6, 1978, Ser. No. 949,147
Int. Cl.³ F21V *33/00*
U.S. Cl. 362—96 **2 Claims**

1. A light assembly for use in an obscured environment which comprises: a source of light, a reflector for directing the light in at least one direction, and means for displacing smoke and other atmospheric contaminents which includes a reservoir for a gas and means for directing said gas in a direction parallel to said one direction about at least the majority of the circumferential extent of said reflector, said means for directing including an elongated hollow member disposed about said reflector, said elongated hollow member being dimensioned and configured at each radial point to induce a drag at the

interior surface of said elongated hollow member as a result of fluid flow which is equal to the drag simultaneously induced



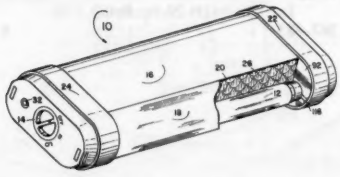
on said reflector as a result of fluid flow whereby turbulence between said reflector and said member is minimized.

4,268,894

PORTABLE WATERPROOF FLUORESCENT LANTERN

William Bartunek, Yonkers, N.Y., and Henry R. Mallory, Greenwich, Conn., assignors to Duracell International Inc., Bethel, Conn.

Filed Mar. 5, 1979, Ser. No. 17,216
Int. Cl.³ F21L *7/00*
U.S. Cl. 362—158 **9 Claims**



1. A portable waterproof fluorescent lantern comprising a case impervious to the entry of water, said case comprising a partially transparent, substantially continuous outer shell having first and second open ends, a first cap covering and permanently sealed to the first open end, and a second cap firmly attached to the first end of the battery holder and capping the second open end of said outer shell; a fluorescent lamp within said case; a self-contained power source within said case for powering said lamp, said self-contained power source comprising a battery holder having first and second ends; means for activating said self-contained power source operatively associated with said case, said means being sealed to maintain said case in a waterproof condition; means for locking the case comprising a pair of mating male and female threaded elements, one element being located on the second end of the battery holder, and the second mating threaded element being rotatably situated in the first end cap; a first gasket operatively associated with the second open end and the second cap; and a second gasket operatively associated with said threaded mating elements whereby upon the complete mating of the elements said lantern is rendered waterproof.

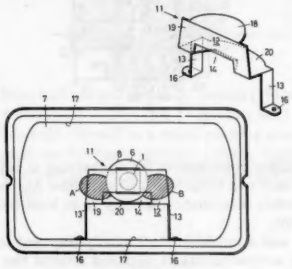
4,268,895

AUTOMOTIVE HEADLIGHT

Hisao Yabata, Takasaki, Japan, assignor to Ichikawa Press Industries Co., Ltd., Takasaki, Japan

Filed Aug. 4, 1978, Ser. No. 931,099
Claims priority, application Japan, Dec. 29, 1977, 52/176567[U]
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—307 **6 Claims**

1. An improved automotive headlight of the type having:
a front lens and a rear reflector enclosing a headlight cavity therebetween;
a lamp bulb disposed near the center of the reflector within said headlight cavity, said lamp bulb being of the type having ray refracting base wall portions adjacent its rear end, such that light rays passing through said ray refracting portions of said lamp bulb have paths from said bulb back to said reflector and forwardly out through said lens;
a hood disposed in said cavity and having means supporting said hood on said reflector, said hood having side walls disposed on opposite sides of said lamp bulb and a top wall overlying a substantial portion of said lamp bulb and a bottom wall underlying said lamp bulb and a front wall disposed in front of said lamp bulb and joining said top and bottom walls of said hood, said hood defining a rear opening box receiving said lamp bulb;
wherein the improvement comprises:
said hood including light blocking wings which extend



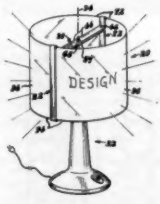
horizontally beyond said lamp bulb into said refracted ray path to block at least a part of said refracted rays, said wings being spaced laterally outboard of said lamp bulb and extending rearwardly behind and on opposite sides of said lamp bulb, said wings angling divergently rearwardly from said side walls of said box, said wings each comprising a rearwardly extending leg terminating in a foot fixed to said reflector on opposite sides of the axis of said lamp bulb and defining said means supporting said hood on said reflector, and wings each further comprising a substantially triangular extension depending from said leg into said refracted ray path to block said refracted rays before they reach said reflector, said light blocking wings being free of connection to said lamp bulb except through said reflector.

4,268,896

LAMPSHADE MEANS

Ray R. Mann, 3447 Georgetown Rd., Indianapolis, Ind. 46224

Filed Feb. 21, 1980, Ser. No. 123,298
Int. Cl.³ F21V *1/02*
U.S. Cl. 362—311 **9 Claims**



1. A lampshade, comprising, in combination:
a pair of generally vertical support members, each provided with a recess groove means providing a pair of opposed abutments;
laterally-extending support means supporting the said vertical support members from the associated lamp device and spaced from the vertical axis of the lamp device;
a resiliently deformable panel means;

the groove means of each support member, and its opposed abutments, being provided such that the effective axial plane of the two groove means are non-planar, and are spaced apart, such that opposed edges of the panel means may be inserted into the operatively adjacent groove means of operatively adjacent support members but that in doing so the panel means must be resiliently deformed sufficiently to impart stress thereinto which causes portions of the panel means at or adjacent said opposed edges to press against the opposed abutments, thereby snugly retaining the assembly of the panel means and the support members;

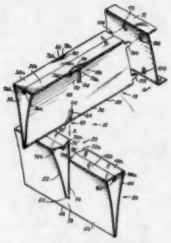
in a combination in which there are provided at least two of the said panel means, and each of the support members is provided with groove means opening outwardly in opposite directions.

4,268,897

SELF-LOCKING LOUVER FOR LIGHTING FIXTURE

Alfred W. Schierwagen, Richmond Hill, and Thomas D. La Mountain, Syosset, both of N.Y., assignors to Templet Industries, Inc., Plainview, N.Y.

Filed Jul. 23, 1979, Ser. No. 59,688
Int. Cl.³ F21V *17/02*
U.S. Cl. 362—325 **14 Claims**



1. An easy-to-assemble, self-locking, low brightness louver for a lighting fixture of the type having an elongated light source, comprising:

(a) a plurality of elongated light baffles of generally triangular cross-section, each baffles having a top wall which faces the light source, and a pair of concavely-curved side walls which converge from opposite sides of the top wall along predetermined parabolic paths and which meet at a common lower edge that is located below the light source in a genrally horizontal plane to thereby define relative to the latter a cutoff angle with direct light emitted from the light source,

each parabiolic side wall having a reflective specular finish being adapted for reflecting light emitted from the light source at angles with respect to the horizontal plane which are at least equal to the given cutoff angle;

(b) assembly means for alingning a first set of the baffles in a direction generally longitudinally of the light source, and for aligning a second set of the baffles in a direction generally transversely of the light source,

both longitudinal and transverse baffles being assembled in a criss-crossed, grid-type lattice arrangement which forms a plurality of light passageways bounded by the parabolic side walls; and

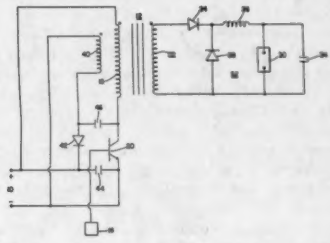
(c) self-locking means for snappingly interengaging the longitudinal and transverse baffles in said lattice arrangement with snap-type action, whereby a louver of unitized construction may be quickly and easily snappingly assembled at the site of the lighting fixture.

4,268,898

SEMICONDUCTOR SWITCHING CIRCUIT WITH CLAMPING AND ENERGY RECOVERY FEATURES

Harold J. Brown, Lorain, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Mar. 20, 1980, Ser. No. 132,173
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—20 **19 Claims**



1. In a circuit of the type including a semiconductor switching means coupled to source of input voltage and to an inductive energy storage means said switching means responsive to a source of periodic switching signals to thereby switch between conductive and nonconductive states said inductive means storing energy when said switching means is in said conductive state, the improvement therein comprising:

(a) means responsive to the change of said switching means from said conductive to said non-conductive state for maintaining the voltage across said switching means at a magnitude which is approximately equql to twice the voltage of said input source until the energy stored in said inductive means is recovered; and

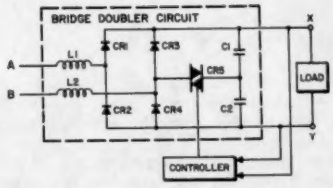
(b) energy recovery means connected to said voltage maintaining means and said input source and inductively coupled to said inductive storing means for recovering the energy stored in said inductive means when said switching means becomes non-conductive, said energy recovery means including means for returning said recovered energy to said input source.

4,268,899

BRIDGE-DOUBLER RECTIFIER

Gary J. Rokas, Lasalle, Canada, assignor to Sperry Corporation, New York, N.Y.

Filed Jun. 15, 1979, Ser. No. 48,855
Int. Cl.³ H02M *7/02*
U.S. Cl. 363—61 **6 Claims**



1. A rectifier circuit comprising:

bridge means for rectifying at least one phase of an alternating input signal to a full wave signal;

capacitor means coupled to said full wave signal and having a voltage control terminal for producing an output signal, the voltage level of said output signal remaining substantially constant as the peak level of said input signal varies;

bidirectional current means having a gate and a first and

second terminals, said first terminal connected to said voltage control terminal and said second terminal connected to said bridge means, for conducting current in response to a control signal; and

control means coupled to said gate and producing said control signal for controlling the conduction time of said bidirectional current means, and thereby causing said rectifier to operate in a voltage doubler mode and regulate the level of said output signal, comprising;

a constant reference voltage source proportional to the constant level desired of said output signal;

ramp means coupled to said input signal for producing a ramp signal synchronized to said input signal;

error means coupled to said output signal for comparing said reference voltage to a feedback signal, said feedback signal being proportional to said output signal, and producing an error signal;

comparator means for comparing said error signal with said ramp signal and producing a pulse enable signal whenever said ramp signal is greater than said error signal;

modulating means coupled to said pulse enable signal for phase width modulating said control signal, the conduction time of said bidirectional current means corresponding to the time width of said pulse enable signal.

4,268,900

DEVICE FOR CONTROLLING A PLURALITY OF CONVERTERS

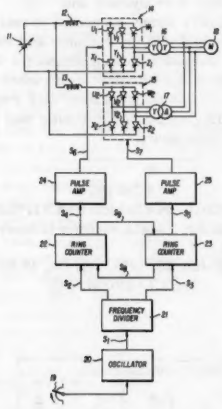
Akio Hirata, 1-10-6, Kai-machi, Fuchu-shi, Tokyo, Japan

Filed Dec. 11, 1979, Ser. No. 102,440

Claims priority, application Japan, Dec. 27, 1978, 53-163191

Int. Cl.[3] **H02M** *7/515*

U.S. Cl. 363—71 **8 Claims**



1. A device for controlling a plurality of power converters which are connected in parallel with each other and which convert direct current power into alternating power, said device comprising:

reference circuit means for producing a reference signal having a frequency proportional to the frequency of the output of said controlling device;

a plurality of converter driving means coupled to each of said parallel power converters for driving said converters in response to said reference signal, one of said converter driving means being provided for each of said parallel converters; and

interlock means coupled to each of said plurality of converter driving means for supplying interlock signals to each of said plurality of converter driving means and for maintaining each of said power converters in an exact phase relationship to each other.

4,268,901

VARIABLE CONFIGURATION ACCOUNTING MACHINE WITH AUTOMATIC IDENTIFICATION OF THE NUMBER AND TYPE OF CONNECTED PERIPHERAL UNITS

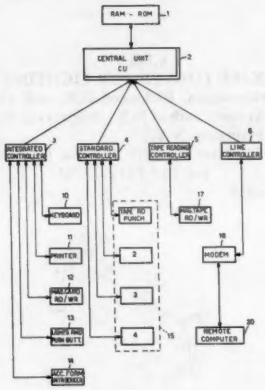
Angelo Subrizi, and Ettore Violino, both of Ivrea, Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Aug. 21, 1975, Ser. No. 606,394

Claims priority, application Italy, Sep. 18, 1974, 69812 A/74

Int. Cl.[3] **G06F** *9/06, 13/00*

U.S. Cl. 364—200 **8 Claims**



1. A variable configuration accounting machine adapted to be connected to a variable number and type of peripheral units, said machine comprising a central unit operable for controlling the operations of said machine and of the peripheral units connected thereto, a first read-write memory for storing data and instructions adapted to be executed for operating said central unit and said peripheral units, a second memory for permanently storing microprograms adapted to be fetched by said central unit for executing said instructions, said second memory including a first section for storing at least an initialization microprogram and a plurality of memory sections, individually selectively connectable to said central unit and each one storing microprograms for executing instructions for operating a corresponding one of said peripheral units connected to the machine in a specific configuration, said first memory comprising a first zone reserved to the central unit for execution of the microprograms and a second zone for storing data and instructions, and manual means operable for causing the execution of said initialization microprogram for initializing the machine, wherein the improvement comprises:

identifying means controlled by predetermined microinstructions of said initialization microprogram for sequentially identifying said memory sections;

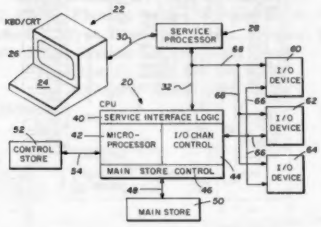
storing means responsive to each identification of one of said memory sections by said identifying means for storing in said first zone a corresponding value indicating the number of memory locations corresponding to the identified section of said second memory;

and, means controlled by said storing means for defining said first zone according to said value, whereby said first memory is initialized with a first zone having a reserved number of allocated memory locations variable according to the number and type of said connected peripheral units.

4,268,902
MAINTENANCE INTERFACE FOR A SERVICE PROCESSOR-CENTRAL PROCESSING UNIT COMPUTER SYSTEM

Neil C. Berglund, Kasson, and James R. Nieling, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,673
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **32 Claims**



9. A computer system comprising:

first processing means for generating commands and transmitting and receiving data;

second processing means for generating commands and transmitting and receiving data and operating asynchronously to said first processing means;

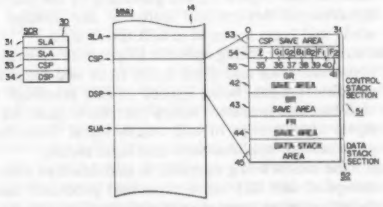
interface means interconnected to said first and second processing means for enabling the transmission of said commands and data generated by either said first or said second processing means between said first and said second processing means without communication contention and loss of data and commands transferred between said first and said second processing means; and

said interface means and said second processing means including a plurality of internal storage elements connected for operation in a nondiagnostic mode and connected serially as a plurality of shift rings for operation in a diagnostic mode.

4,268,903
STACK CONTROL SYSTEM AND METHOD FOR DATA PROCESSOR

Yusaku Miki, Fuchu; Hidemi Yamamoto, Kunitachi; Yuichi Kimihira, Urawa, and Akio Tanaka, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabusiki Kaisha, Japan

Filed Nov. 27, 1978, Ser. No. 964,089
Claims priority, application Japan, Nov. 28, 1977, 52-141515
Int. Cl.³ G06F *13/06*
U.S. Cl. 364—200 **18 Claims**



1. In a computer system having a memory unit, arithmetic logic (ALU) unit, working registers, a stack control register, and means for executing control instructions associated with said programs, a method of controlling the storage of linkage data at the time control of said system is shifted from a calling program to a called program comprising the steps of:

initializing said stack control register in response to a control instruction by entering the same predetermined address value into a control stack pointer (CSP) section and a data stack pointer (DSP) section of said register;

loading the contents of said CSP section into said memory unit at the address specified by the contents of said DSP section to save a control stack pointer address at the time program control of said system shifts from said calling program to said called program;

moving the contents of said DSP section into said CSP section;

adding in said ALU a first address increment derived from a control instruction to the contents of said CSP section to determine an intermediate address defining an area in said memory unit for storing program status data pertaining to said calling program;

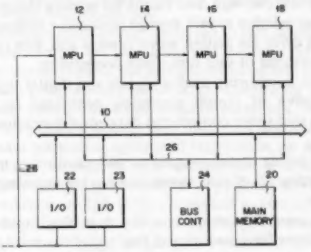
adding in said ALU a second address increment derived from a control instruction to said intermediate address to determine an offset address defining a memory area for storing working data pertaining to said called program; and

entering said offset address into said DSP section to establish an address pointer for the entry of the next control stack pointer address to be saved.

4,268,904
INTERRUPTION CONTROL METHOD FOR MULTIPROCESSOR SYSTEM

Seigo Suzuki, Yokohama, and Seiji Eguchi, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 878,085, Feb. 15, 1978, abandoned, which is a continuation of Ser. No. 741,465, Nov. 12, 1976, abandoned. This application Dec. 13, 1978, Ser. No. 969,008
Int. Cl.³ G06F *9/46, 15/16*
U.S. Cl. 364—200 **3 Claims**



1. In a multiprocessor system formed of a plurality of microprocessors and including a shared memory unit, a method for controlling the processing of an interrupt command issued by an I/O device electrically interconnected with said microprocessors comprising the steps of:

entering into the general register of each of said microprocessors a program status word including a priority order designating code indicating the relative priority in which said microprocessor is assigned to accept interrupt commands;

storing in said shared memory unit a plurality of entry addresses at locations dedicated to said individual microprocessors and addressable in terms of said priority order designating code;

selecting, in accordance with the priority order defined by said priority order designating code, one of said microprocessors to process an interrupt-servicing program in response to an interrupt command;

addressing said main memory unit at the entry address data location corresponding to the priority order designating code of said selected microprocessor; and

loading into the general register of said selected microprocessor entry address data obtained from said addressed

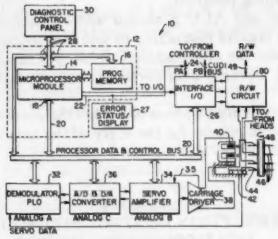
entry address data location to enable said microprocessor to access a stored interrupt-servicing program for processing said interrupt command.

4,268,905

AUTONOMOUS FAULT DIAGNOSIS FOR DISK DRIVE USING AN INTERNAL MICROPROCESSOR

Donald F. Johann, Palo Alto, and Charles E. Mendenhall, Campbell, both of Calif., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,604
Int. Cl.[3] G06F *11/00, 13/04*
U.S. Cl. 364—200 **10 Claims**



1. In a computer disk drive having a rotatable disk storage medium and means coupling said disk storage medium to a remote host controller, said host controller being operative for communicating digital data signals between a remote independently operative central processing unit of a master computer and said disk storage medium, said disk drive including a carriage for displacing a plurality of read and write heads, means for driving said carriage, and means for sensing the position of said carriage relative to said storage medium, a system internal to said disk drive for testing servo control and data communication subsystems of said disk drive comprising:

means for monitoring analog signals and digital signals representative of circuit operation generated by circuits within said servo control and data communication subsystems;

first converting means coupled to said monitoring means for converting all of said monitored analog signals to digital signals;

second converting means coupled to analog inputs of said subsystems for converting digital signals to analog signals;

means for communicating analog signals output from said second converting means to an input of said first converting means in a test loopback;

digital signal bus means coupled to said subsystems of said disk drive, said bus means also being coupled to an output of said first converting means and to an input of said second converting means, said bus means comprising a three-state bidirectional bus;

means including a programmed microprocessor and associated digital memory in said disk drive for controlling disk drive operation and diagnostic functions, said digital memory being for storage of preprogrammed instructions defining said operation and diagnostic functions, and said microprocessor being coupled to said bus means in order to communicate digital control signals to said subsystems including to said second converting means and to receive data and status signals from said subsystems including from said first converting means; and

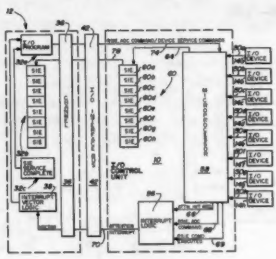
a pseudo-position generator for generating signals simulating position output signals of said carriage position sensing means with respect to said disk storage medium such that selected subsystems can be tested without carriage motion.

4,268,906

DATA PROCESSOR INPUT/OUTPUT CONTROLLER

Donall G. Bourke; Richard N. Mendelson, both of Boca Raton, and Luis Madruga, Delray Beach, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,381
Int. Cl.[3] G06F *3/00, 9/46*
U.S. Cl. 364—200 **3 Claims**



1. An input/output controller for transferring service request signals and data between a plurality of input/output devices and a host processor, wherein each of the plurality of input/output devices generate multiple asynchronous service request signals for transfer to the host processor comprising:

processor means interconnected via a plurality of signal lines to the plurality of input/output devices for receiving data and the service request signals generated by the plurality of input/output devices via said plurality of signal lines, said processor means operable to generate a first signal in response to receipt of a service request signal from one of the plurality of input/output devices;

storage means interconnected to said processor means for storing service request signals received by said processor means from the plurality of input/output devices;

said processor means operable to generate a second signal upon the condition that no service request signals are stored in said storage means;

logic means operable between active and deactive states, being interconnected to said processor means and being operable to receive said first and second signals generated by said processor means;

said logic means further being connected to the host processor and being operable in said active state in response to receipt of said first and second signals generated by said processor means to thereby generate a third signal for application to the host processor upon the condition that no service request signals are stored in said storage means while said logic means is in said deactive state to thereby transfer from said storage means to the host processor those service request signals generated by the plurality of input/output devices and stored in said storage means while said logic means is in said active state;

the host processor being operable to generate a fourth signal upon receipt of said third signal from said logic means, said fourth signal being applied to said processor means via a bus, said processor means operable to generate a fifth signal upon receipt of said fourth signal from the host processor for application to said logic means;

said logic means being operable in said deactive state upon receipt of said fifth signal from said processor means to thereby prevent generation of additional ones of said third signal from said logic means for application to the host processor until processing of the service request signals transferred from said storage means to the host processor has been completed by the host processor, generation of said third signal being prevented while service requests are stored in said storage means to allow data to be transferred from the host processor via said bus to the ones of

the plurality of input/output devices associated with the service request signals transferred to the host processor while the other ones of said plurality of input/output devices generate additional service request signals to said processor means for storage in said storage means; and

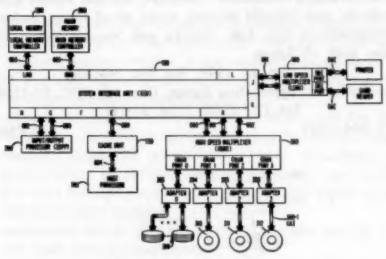
said logic means being reactivated in said active state upon receipt of said second and fifth signals from said processor means.

4,268,907

CACHE UNIT BYPASS APPARATUS

Marion G. Porter, Phoenix; Robert W. Norman, Jr., Glendale, and Richard T. Flynn, Peoria, all of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 22, 1979, Ser. No. 5,101
Int. Cl.[3] G06F *13/00*; G11C *9/06*
U.S. Cl. 364—200 **38 Claims**



1. A data processing system comprising:

an addressable main store having a plurality of word locations for storing information including data and instructions;

a cache unit coupled to said main store for providing immediate access to data and instruction words fetched from said main store, said cache unit including a buffer store having a plurality of addressable locations, and said cache unit including control means for fetching said data and instruction words from said main store in response to command signals; and,

processing means coupled to said buffer store, said processing means for processing instructions fetched from said main store, each instruction including an operation code portion, said processing means including control means for generating signals including memory commands required for the execution of said instructions, said processing control means including decoder circuit means responsive to signals indicative of an operation code portion coded to specify a predetermined class of instruction to generate coded command signals specifying the fetching of a segment of data words from said cache unit; and,

said cache unit further including:

decoder circuit means coupled to said processing means;

indicator circuit means coupled to said decoder circuit means, said cache decoder circuit means in response to a first set of said coded command signals to switch said indicator circuit means to a predetermined state; and,

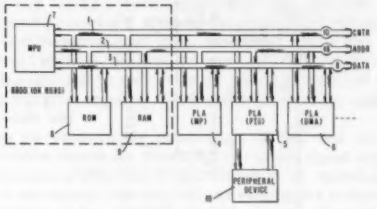
bistable control means coupled to said indicator means and to said cache decoder circuit means, said bistable control means being conditioned by said cache decoder circuit means in response to a succeeding set of coded command signals to switch to said predetermined state when said segment of data words is not stored in said buffer store and said indicator circuit means is in said predetermined state for inhibiting other segments of data words fetched from said main store in response to said predetermined class of instruction from being stored in said buffer store.

4,268,908

MODULAR MACROPROCESSING SYSTEM COMPRISING A MICROPROCESSOR AND AN EXTENDABLE NUMBER OF PROGRAMMED LOGIC ARRAYS

Joseph C. Logue, and Wei-Wha Wu, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,505
Int. Cl.[3] G06F *9/22*
U.S. Cl. 364—200 **7 Claims**



1. Apparatus for extending the functional capability of a microprocessor having a given standard set of instructions stored therein to execute at least one additional instruction beyond its capability to execute said given standard set of instructions,

said microprocessor communicating with system components through a standard bussing system comprising a control bus, an address bus and a data bus, said apparatus comprising

at least one programmed logic array connected to said control, address and data busses,

each said programmed logic array being equipped to interpret a respective address on said address bus as a respective additional instruction

said microprocessor being connected to said control, address and data busses and providing said standard set of instructions on said control bus and addresses on said address bus,

each said programmed logic array comprising instruction register means connected to said address bus for receiving and temporarily storing said respective address constituting said respective additional instruction, an AND array connected to receive each address stored in said register for generating a product term in response to said respective address, an OR array connected to receive said product term from said AND array for generating resulting signal, for executing said respective additional instruction.

4,268,909

NUMERIC DATA FETCH - ALIGNMENT OF DATA INCLUDING SCALE FACTOR DIFFERENCE

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1979, Ser. No. 220
Int. Cl.[3] G06F *7/38*
U.S. Cl. 364—200 **26 Claims**

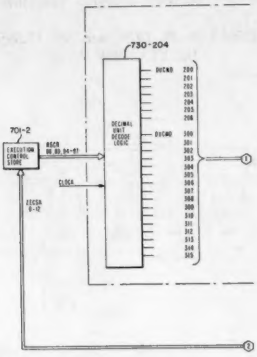
20. A data processing system comprising:

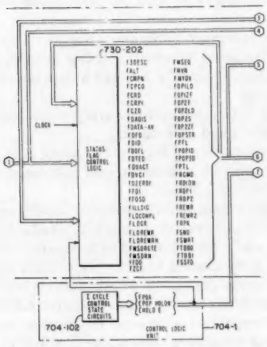
a memory means for storing operands and instructions, each instruction including an operation code portion and also including descriptor information for describing characteristics of said operands, said instructions including an operation code portion specifying a decimal numeric operation performed by said system;

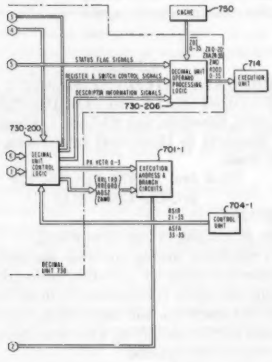
a decimal unit coupled to said memory means for receiving said operand words and signals indicative of said descriptor information, in response to signals indicative of said decimal numeric instruction;

said decimal unit including decimal unit control means, responsive to said instruction signals and said descriptor

signals for generating register and switch control signals, said decimal unit further including operand processing means, responsive to said instruction signals, for receiving said operands from said memory means, and responsive to said register and switch control signals, for aligning said operands;







executing means coupled to said decimal unit for receiving said aligned operands for performing numerical operations specified by said decimal arithmetic instruction;

wherein said decimal unit control means comprises:

storage means coupled to said memory means and responsive to said instruction signals for storing said descriptor information; and

adder means coupled to said storage means, and responsive to said instruction signals and said descriptor signals for generating receive count signals indicative of the number of words of said operands to be received by said decimal unit from said memory means, send count signals indicative of the number of words to be transferred by said decimal unit to said executing means, and shift count signals indicative of the number of decimal digits said operands are to be shifted in said decimal unit.

4,268,910

METHOD FOR CONTROLLING TIMING OF SPARK IGNITION FOR AN INTERNAL COMBUSTION ENGINE BY FEEDBACK RELATED TO THE DETECTION OF KNOCKING

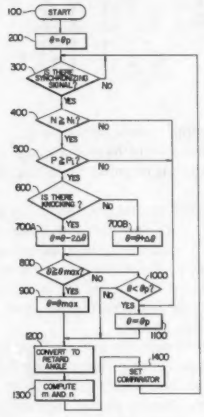
Norio Omori; Hideya Fujisawa, both of Kariya; Yutaka Kawashima, Okazaki; Masakazu Ninomiya, Kariya; Hisasi Kawai, Toyohashi, and Takeshi Matsui, Aichi, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Nippon Soken, Inc., Nishio, both of, Japan

Filed Dec. 14, 1978, Ser. No. 969,496

Claims priority, application Japan, Dec. 16, 1977, 52-152023

Int. Cl.[3] F02P *5/14, 17/00*

U.S. Cl. 364—431 **3 Claims**



1. A method for controlling a timing of spark ignition for an internal combustion engine having an output shaft rotated by a piston, the method comprising the steps of:

monitoring a magnitude of vibration of said internal combustion engine by vibration responsive means coupled to said internal combustion engine;

comparing said magnitude of vibration monitored by said monitoring step with a reference magnitude to generate a first signal when said magnitude of vibration is larger than said reference magnitude and to generate a second signal when said magnitude of vibration is smaller than said reference magnitude;

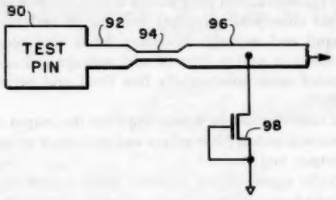
incrementing altering an instantaneous timing of spark ignition by incrementally retarding said instantaneous timing by a first predetermined value in response to said first signal and by incrementally advancing said instantaneous timing by a second predetermined value in response to said second signal, said first predetermined value being larger than said second predetermined value; and

supplying said internal combustion engine with a spark ignition at a timing of spark ignition corrected by said altering step to control the ignition angle just below the condition where knocking of said engine occurs.

4,268,911
ROM PROGRAM SECURITY CIRCUITS

Antony G. Bell, Sunnyvale, Calif., assignor to Fairchild Camera and Instrument Corp., Mountain View, Calif.

Filed Jun. 21, 1979, Ser. No. 50,909
Int. Cl.[3] G11C *17/00, 11/40*
U.S. Cl. 365—104 3 Claims



1. A program security circuit for a read-only memory contained in a memory chip having a test pin for testing and verifying a selected program stored in the memory, the memory chip having a memory data bus and a memory read circuit conductor, the security circuit comprising:

a permanent register formed in the memory chip for identifying the selected program and thereby identifying the memory chip, the permanent register containing a selected binary identifying number placeable into the memory data bus upon application of a suitable input signal to the permanent register;

a conductive fusible link between the test pin and the memory read circuit conductor;

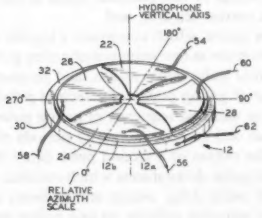
an enhancement transistor having its drain coupled to the memory read circuit conductor and having its source and gate coupled to each other and to ground reference; and

means for applying to the test pin a negative voltage whose magnitude exceeds the magnitude of the threshold voltage of the transistor, whereby the transistor conducts a fusing current through the fusible link to destroy the fusible link and thereby permanently remove access to the program through the test pin.

4,268,912
DIRECTIONAL HYDROPHONE SUITABLE FOR FLUSH MOUNTING

John C. Congdon, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Co., Fort Wayne, Ind.

Filed Jun. 6, 1978, Ser. No. 912,918
Int. Cl.[3] H04R *17/00*
U.S. Cl. 367—163 8 Claims



1. A directional hydrophone having a main surface plane for sensing in a liquid transmission medium acoustic wave travel in planes substantially parallel to the main plane, comprising:

a plate having a main surface bounded by an outer peripheral edge, said main surface parallel to and defining the main surface plane and adapted to be coupled to the liquid transmission medium for providing mechanical stresses in the plate in response to the acoustic wave travel traversing said main surface in the coupled transmission medium, the plate having portions therein and having a center point on said main surface and a major axis parallel to said main surface and passing through said center point;

a first electroacoustic transducer element coupled to a first portion of the plate for activation by the stresses in said first portion and providing a first electrical output signal in response thereto;

a second electroacoustic transducer element coupled to a second portion of the plate for activation by the stresses in said second portion and providing a second electrical output signal in response thereto, said first and second portions having a spaced-apart relationship and each one located diametrically opposite the center point and equal-distant therefrom, said major axis bisecting said first and second portions, the first and second transducer elements being identical to each other for providing identical output signals in response to substantially identically applied stresses; and

means for subtractively combining said first and second electrical signals for producing a resultant signal dependent upon a difference in said stresses in the spaced-apart first and second plate portions and varying as a cosine-like function of the direction of said acoustic wave travel transversing said surface relative to said major axis.

6. An apparatus for sensing direction of propagation of sound waves in a fluid transmission medium, comprising:

a plate means having a relatively flat surface and having predetermined portions therein and a center point, said portion having a spaced-apart relationship and each one located diametrically opposite the center point and equal-distant thereform, the plate means adapted to be coupled to the fluid transmission medium for providing sound wave motions in said portions in response to sound wave propagation transversing said surface, said sound wave motions in said portions indicative of the direction of propagation of the sound waves in the transmission medium;

at least one pair of identical electroacoustic transducers, each one of the transducers of the pair coupled to a respective one of the predetermined portions for providing respective electrical output signals in dependence upon said wave motions in each of said respective predetermined portions; and

subtractive combining means for combining the output signals from each said pair of identical transducers for producing a respective resultant signal which varies as a function of the direction of said sound wave travel propagation transversing said plate.

4,268,913
ELECTRONIC CALCULATOR WATCH

Tadahiko Nakagiri, Higashimurayama; Kunihiro Daigo, Higashiyamato; Toshiaki Oguchi, Kodaira; Minoru Natori, Tokyo; Toshikazu Hatuse; Toshikazu Shimazaki, both of Tanashi; Kouhei Kawanobe, Kawagoe; Hiroshi Ogawa, Tokorozawa; Yoshinobu Kashima, Tanashi; Singo Ichikawa, Sayama; Ryo Namiki, Tokyo, and Hisao Yamagata, Tokorozawa, all of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 13, 1977, Ser. No. 796,566
Claims priority, application Japan, May 18, 1976, 51-62809[U]; May 18, 1976, 51-62810[U]; May 24, 1976, 51-66363[U]; May 25, 1976, 51-59628; Jun. 2, 1976, 51-63546; Jun. 8, 1976, 51-749937[U]; Jun. 8, 1976, 51-67297; Jun. 8, 1976, 51-67298; Jun. 9, 1976, 51-66450; Jun. 14, 1976, 51-69450; Jul. 9, 1976, 51-80963; Jul. 19, 1976, 51-85725; Jul. 19, 1976, 51-85726; Jul. 19, 1976, 51-85727; Jul. 19, 1976, 51-95810[U]; Apr. 8, 1977, 52-40819
Int. Cl.[3] G04B *47/00;* G04C *19/00;* G04B *29/00;* G06F *1/00*
U.S. Cl. 368—10 39 Claims

1. An electronic calculator watch comprising:

timekeeping means composed of an oscillator, a frequency divider connected to the oscillator, a counter circuit con-

nected to the frequency divider, and a driver circuit connected to the counter circuit for providing an output signal indicative of time information;

calculating means composed of an oscillator circuit and a calculation circuit responsive to perform calculations under control of numerical inputs furnished by an external operating device provided on a watch case supported a bezel retaining a watch glass, said bezel having an annular recess and a plurality of circumferentially spaced through-holes, said external operating device comprising a group of push-button switches for operating the timekeeping means and calculating means, said push-button switches being arranged about the outer circumference of the display device, said external operating device further comprising a ring member disposed in said annular recess and having a plurality of circumferentially spaced cylindrical portions pressure fitted into the through-holes of the bezel, each of said cylindrical portions having a stepped bore formed therein to accommodate one of the push-button switches; and

a liquid crystal display device including a first display section connected to the driver circuit of the timekeeping means for displaying the output signal delivered therefrom, and a second display section connected to the calculation means for displaying the results of calculations, said first display section having a first set of electrodes formed on a transparent supporting plate of said liquid crystal display device and said second display section having a second set of electrodes formed on said transparent supporting plate, each of said first and second sets of electrodes comprising a plurality of digit electrodes and a plurality of segment electrodes arranged in a matrix configuration;

said timekeeping means and said calculation means being formed on integrated circuit chips which are separated from each other and are connected to independent power sources, said integrated circuit chips being mounted on a circuit board retained between said watch case and a back cover secured thereto, edges of said integrated circuit chips being arranged in said single plane obliquely with respect to each other.

4,268,914

RECEIVING APPARATUS FOR MESSAGES WITH IN-BAND SIGNALS

Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1), and Sidney T. Fisher, 53 Morrison Ave., Mt. Royal, Montreal, Quebec, Canada (H3R 1K3)

Filed Feb. 8, 1980, Ser. No. 119,768

Int. Cl.[3] **H04J** *15/00*

U.S. Cl. 370—118 **1 Claim**

1. Receiving apparatus for an input wave comprising a message, superimposed noise, and a periodic signal with regularly-occurring zero-crossings at a frequency greater than the minimum sampling or Nyquist frequency of the frequency band of said message, said input wave lying entirely in said message frequency band, including sampling gate, reconstruction filter, pulse generation and subtraction means, delivering said message and said superimposed noise substantially free from said periodic signal to a message output and delivering said periodic signal substantially free from said message and said superimposed noise to a periodic signal output, without material distortion of frequency response or delay of said message, which comprises:

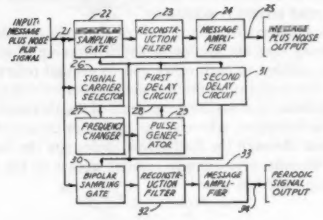
monopolar sampling gate means which receives said input wave, and

first reconstruction filter means which receives the output of said monopolar sampling gate means and has as a pass-band said message frequency band, and reconstructs a replica in analog form of said message and said superimposed noise substantially free from said periodic signal, and

first amplifier means which amplifies the output of said first reconstruction filter means and delivers it to said message output, and

periodic signal carrier selector means which receives said input wave and by at least one means of selectivity, amplitude limiting, non-linear and oscillator synchronizing means produces an output which has the frequency of said periodic signal, which may be the carrier of said periodic signal when it is double-sideband amplitude-modulated, with or without carrier suppression, and

frequency changing and pulse generating means which receive the output of said periodic carrier selector means and produce a sequence of regularly-occurring short pulses at a pulse repetition frequency which is greater than the minimum sampling or Nyquist frequency of said mes-



sage frequency band, and which is equal to the frequency of zero-crossings of said periodic signal at the input to said periodic carrier selector, divided by a positive odd integer, and

first pulse delay means which receives the output of said pulse generating means and delivers gating pulses of a first polarity at regular periods at some or all of the instants of zero-crossings of said periodic signal at said input to said periodic carrier selector, and

subtraction means which comprises a bipolar sampling gate which receives as one sequence of gating pulses the output of said first pulse delay means, and receives as a second sequence of gating pulses of a second polarity, spaced in time from said first sequence of gating pulses by approximately an odd number of quarter periods of said periodic signal, the output of a second pulse delay means, and

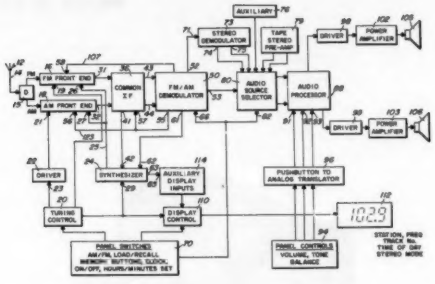
said second pulse delay means which receives its input from said first pulse delay means and delivers a sequence of pulses of opposite polarity to said pulses at its input, delayed in time by an interval approximately equal to an odd number of quarter-periods of said periodic signal, and

second reconstruction filter means which receives the output of said bipolar sampling gate means, which passes said periodic signal frequency band and reconstructs the two sequences of samples from said bipolar sampling gate to form said periodic signal in analog form, and delivers said periodic signal to an output circuit, substantially free from said message and said superimposed noise.

4,268,915
UNIVERSAL AUTOMOTIVE ELECTRONIC RADIO WITH DISPLAY FOR TUNING OR TIME INFORMATION

Bernard S. Parmet, Park Ridge, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 789,597, Apr. 21, 1977, abandoned, which is a division of Ser. No. 583,343, Jun. 2, 1975, Pat. No. 4,135,158. This application Sep. 20, 1979, Ser. No. 77,201
Int. Cl.[3] H04B 1/16
U.S. Cl. 455—158 17 Claims



14. In a radio device, the combination including:

first circuit means for generating a substantially fixed frequency oscillator signal;

second circuit means coupled to said first circuit means for receiving and processing said fixed frequency oscillator signal and developing an adjustable frequency signal for tuning the radio;

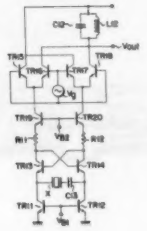
third circuit means coupled to said first circuit means for receiving said fixed frequency oscillator signal and developing in response thereto at least one signal indicative of information other than the frequency to which the radio device is tuned and indicative of information unrelated to the phase and/or frequency of said adjustable frequency signal; and

fourth means coupled to said third circuit means for receiving said at least one indicative signal and displaying said information.

4,268,916
FREQUENCY CONVERTING CIRCUIT

Hiromi Kusakabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 13, 1978, Ser. No. 961,026
Claims priority, application Japan, Nov. 28, 1977, 52-142355
Int. Cl.[3] H04B 1/26
U.S. Cl. 455—333 9 Claims



1. A frequency converting circuit comprising:

a constant current source circuit;

an oscillation circuit coupling to said constant current source circuit, said oscillation circuit including an amplifier section and a series resonant section, said amplifier section including a first transistor having a base, collector and an emitter, said emitter connected to one end of said series-resonant circuit and a second transistor having an emitter connected to the other terminal of said series resonant circuit, a base connected to said first transistor collector and a collector connected to said first transistor base;

means for biasing the amplifier section of said oscillation circuit in accordance with the output current of said constant current source circuit; and

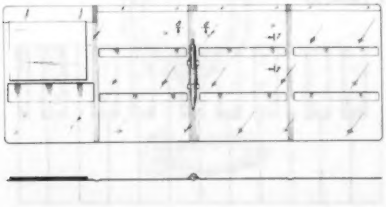
an operation circuit which receives the output signal from said oscillation circuit and an input signal to be frequency-converted and produces a signal corresponding to the product of both the received signals.

DESIGNS

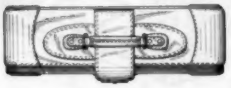
MAY 19, 1981

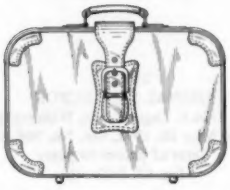
259,220
WRIST BAND WITH POCKET
Larry K. Small, 415 E. Willowbrook Dr., Burlington, N.C. 27215, and Thomas H. Collins, P.O. Box 361, Madison, N.C. 27025
Filed Mar. 5, 1979, Ser. No. 17,648
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—400

259,221
COMBINED COUPON HOLDER, WRITING INSTRUMENT AND MEMO PAD
Richard S. Gebbia, 27 Althea St., Clifton, N.J. 07012
Filed Jan. 29, 1979, Ser. No. 7,110
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—60

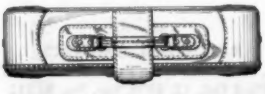


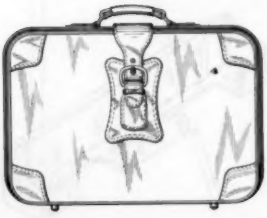
259,222
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Dec. 28, 1978, Ser. No. 974,121
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



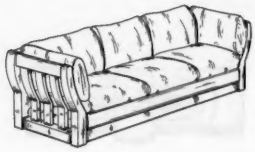


259,223
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Dec. 28, 1978, Ser. No. 974,127
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71



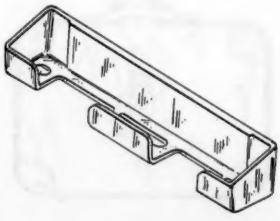


259,224
SEAT OR SIMILAR ARTICLE
George R. Sonnenleiter, Rockford, Ill., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Jun. 12, 1978, Ser. No. 914,805
Term of patent 7 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

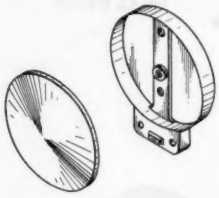


259,225
URINAL DEFLECTOR
Lewis R. Scheer, 1726 S. Lagoon Ave., Wilmington, Calif. 90744
Filed May 15, 1978, Ser. No. 905,642
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—86

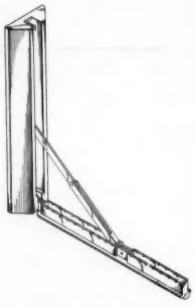
259,226
RAZOR HOLDING RACK
Roy J. Lester, 78 Inwood Ave., Point Lookout, N.Y. 11569
Filed Oct. 12, 1979, Ser. No. 84,112
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—88



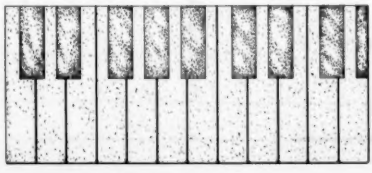
259,227
SUPPORT BRACKET FOR A BATHROOM FIXTURE
Anibal R. Chacon, Cerro de las Torres 304, Col., Campestre Churubusco, Mexico (21)
Filed Sep. 12, 1978, Ser. No. 941,626
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—103



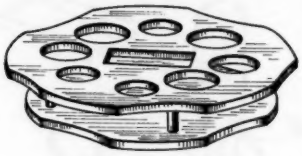
259,228
FOLDABLE GARMENT HANGER
Samuel F. Fabian, 15 Upland Way, P.O. Box 187, Haddonfield, N.J. 08033
Filed Sep. 28, 1978, Ser. No. 946,851
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—124

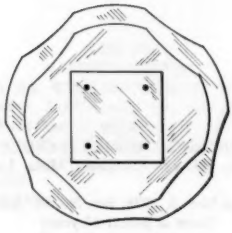


259,229
RUG OR SIMILAR ARTICLE
Charles S. Lady, 323 Niagara Blvd., Fort Erie, Ontario, Canada (L2A 3H1)
Filed Dec. 27, 1978, Ser. No. 974,136
Term of patent 14 years
Int. Cl. D6—*11*
U.S. Cl. D6—210



259,230
ROTATABLE RACK FOR CONDIMENT CONTAINERS
Delbert H. Snyder, 940 Everett Rd., Fremont, Ohio 43420
Filed Apr. 19, 1979, Ser. No. 31,540
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—2

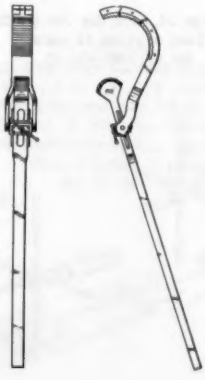




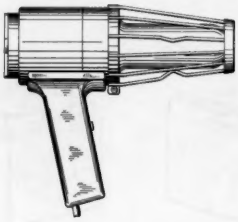
259,231
DRINKING CUP LID FOR DISPENSING SOLID MEDICATION
William Kozlow, Sr., 419 Forest Dr., Union, N.J. 07083
Continuation-in-part of Ser. No. 45,284, Jun. 4, 1979, abandoned. This application Jul. 6, 1979, Ser. No. 55,156
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—40

259,232
COMBINED FOOD AND BEVERAGE COOLER
Richard A. Tarozzi, Gales Ferry, Conn., assignor to King-Seeley Thermos Co., Norwich, Conn.
Filed Aug. 23, 1978, Ser. No. 936,011
Term of patent 14 years
Int. Cl. D07—*07*
U.S. Cl. D7—61

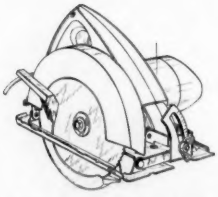
259,233
WRENCH
John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada (N8S 2S4)
Filed Jul. 28, 1978, Ser. No. 929,037
Term of patent 14 years
Int. Cl. D08—*05*
U.S. Cl. D8—21



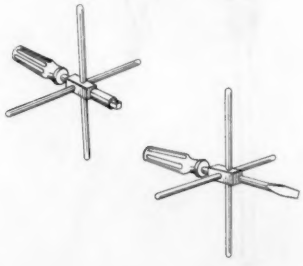
259,234
FLAMELESS HEAT GUN
Frank N. Pfeil, 1101 Cedar Creek, Racine, Wis. 53402
Filed Nov. 20, 1978, Ser. No. 962,133
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



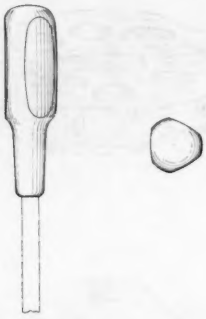
259,235
CIRCULAR SAW
John E. Dibbern, Jr., Street; Robert I. Somers, Baltimore; Richard A. Schafebook, Lutherville, all of Md., and Richard L. Mitchell, Florissant, Mo., assignors to Black & Decker Inc., Newark, Del.
Filed Mar. 14, 1978, Ser. No. 886,529
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—66



259,236
TORQUE APPLYING HAND TOOL
Harold Isaacs, 2567 Lafayette Dr., University Heights, Ohio 44118
Filed Apr. 24, 1978, Ser. No. 899,290
Term of patent 14 years
Int. Cl. D08—*04, 05*
U.S. Cl. D8—82



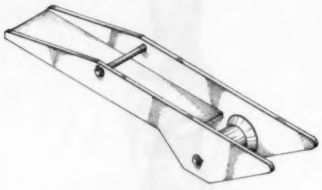
259,237
HANDLE FOR A SHANK-TYPE TOOL
Davorin Savnik, Ljubljana, Yugoslavia, assignor to UNIOR kovaska industrija Zrece, Zrece, Yugoslavia
Filed Jul. 26, 1978, Ser. No. 928,005
Claims priority, application Yugoslavia, Jan. 27, 1978, 25/78
Term of patent 7 years
Int. Cl. D8—*04*
U.S. Cl. D8—83



259,238
GARMENT CARRIER HANDLE
John F. Schenck, III, c/o Cleveland Mills, Lawndale, N.C. 28090
Filed Nov. 6, 1978, Ser. No. 957,940
Term of patent 14 years
Int. Cl. D8—*03;* D6—*08*
U.S. Cl. D8—307

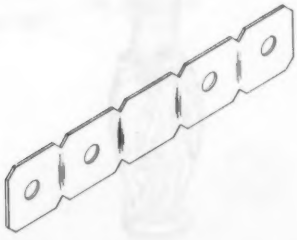
259,239
HANDCUFF KEY
F. Carlos DeWitt, 2715 Southwest Dr., Los Angeles, Calif. 90043
Filed Nov. 27, 1978, Ser. No. 963,845
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—347

259,240
BOAT BOW ROLLER
Clayton E. Myron, 4520-3rd St. NE., Puyallup, Wash. 98371
Filed May 24, 1979, Ser. No. 42,240
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—356

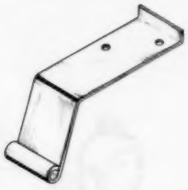


259,241
PIPE HANGER
Paul C. Lynch, Rte. 6, Box 60A, Fairmont, W. Va. 26554, and Ervin M. Driver, 312 Graveline La., Gautier, Miss. 39567
Filed Apr. 20, 1979, Ser. No. 32,096
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—363

259,242
CONNECTOR FOR WOOD MEMBERS
Tyrell T. Gilb, Berkeley, Calif., assignor to Simpson Manufacturing Co., Inc., San Leandro, Calif.
Filed Oct. 5, 1978, Ser. No. 948,708
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—373

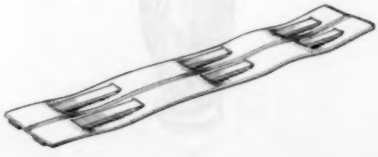


259,243
FREE ROLL CREEPER GUARD
Louis C. Argante, 1236½ 32nd St., Sacramento, Calif. 95816
Filed Jun. 18, 1979, Ser. No. 49,805
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—375



259,244
CABLE HANGER
Paul S. Grecol, Jr., Lithonia, Ga., assignor to National Service Industries, Inc., Atlanta, Ga.
Filed Jun. 4, 1979, Ser. No. 44,982
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—380

259,245
REINFORCING AND PROTECTOR ELEMENT FOR THE EDGES OF PALLET GOODS
Ake O. V. Gemvik, Gökvägen 71, S 183 51 Täby, Sweden
Filed Oct. 25, 1977, Ser. No. 845,251
Claims priority, application Sweden, Apr. 25, 1977, 770917
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—403



259,246
BOTTLE
Hugh J. W. Brandt, Princeton, N.J., and Donald Murray, Chicago, Ill., assignors to J. L. Prescott Co., Passaic, N.J.
Filed Dec. 4, 1978, Ser. No. 967,408
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—404

259,247
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,777
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—310

259,248
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,921
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—310

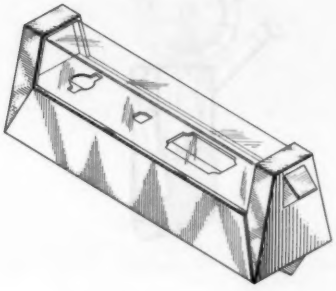
259,249
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,775
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—313

259,250
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,866
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—318

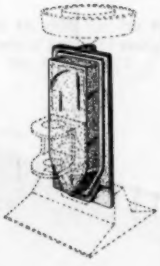
259,251
BOTTLE
Luis Sztuden, 5556 Bloch St., San Diego, Calif. 92122
Division of Ser. No. 899,838, Apr. 25, 1978. This application Jul. 17, 1980, Ser. No. 169,919
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—318

259,252
COMBINED BOTTLE AND HANG TAB
Stanley Acker, c/o 7-11 Sales Inc., 14 Cairngorm Rd., New City, N.Y. 10956
Filed Nov. 13, 1978, Ser. No. 960,488
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—338

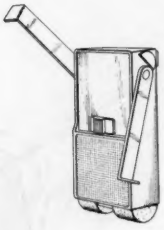
259,253
DISPLAY BOX
Kenneth R. Nelson, West Vancouver, Canada, assignor to Schlage Lock Company, San Francisco, Calif.
Filed Mar. 12, 1979, Ser. No. 19,429
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—418



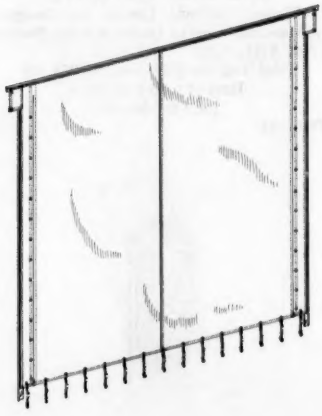
259,254
DIAGNOSTIC TEST DEVICE
Morris L. Givner, Pierfonds, Canada, and Douglas Tiffany, Beverly, Mass., assignors to American Home Products Corporation, New York, N.Y.
Filed Aug. 14, 1978, Ser. No. 933,389
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D10—81



259,255
PORTABLE BURGLAR ALARM
John I. Menzies, and Maureen Menzies, both of 49 Almay St., Kenmore, Queensland, 4069, Australia
Filed Apr. 27, 1979, Ser. No. 34,077
Claims priority, application Australia, Oct. 31, 1978, 76364/78
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D10—106

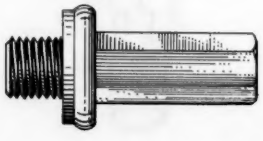


259,256
COMBINED COVER AND SEAL FOR TIP OUT UNIT OF A RECREATIONAL TRAILER
Marie K. Coussens, Edwardsburg, Mich.
Filed Jul. 26, 1978, Ser. No. 928,195
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—106



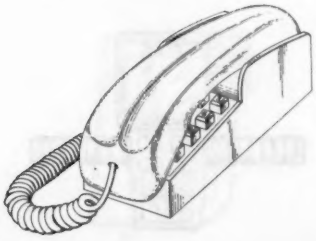
259,257
COMBINED MIRROR AND CLEANING DEVICE THEREFOR
Richard J. Forbyn, P.O. Box 4190, Vallejo, Calif. 94590
Filed Mar. 12, 1979, Ser. No. 19,853
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—188

259,258
TERMINAL POST FOR A SIDE TERMINAL BATTERY
Robert M. Valerio, 1780 Benjamin St., Madison, Ohio 44057
Filed Mar. 27, 1978, Ser. No. 890,861
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D13—10

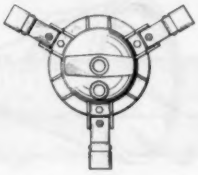


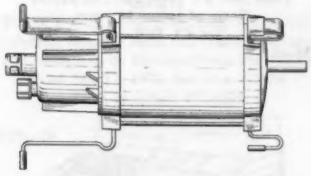
259,259
COMBINED CASSETTE TAPE RECORDER, RADIO AND TELEVISION RECEIVER
Shigeki Masatsugu; Tsutomu Miki, both of Tokyo, and Hirotsugu Misaka, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Nov. 13, 1978, Ser. No. 959,659
Claims priority, application Japan, May 17, 1978, 53-19892
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5

259,260
TELEPHONE INSTRUMENT
Knut H. Blomberg, Lokattsvägen 39, S-161 37 Bromma, Sweden
Filed Apr. 26, 1978, Ser. No. 900,278
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

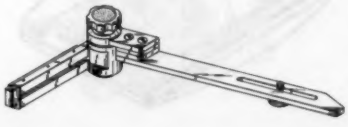


259,261
AERATOR MOTOR ASSEMBLY FOR A SEWER SYSTEM
David S. MacLaren, 21176 Brantley Rd., Shaker Heights, Ohio 44122
Filed Nov. 22, 1978, Ser. No. 963,038
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

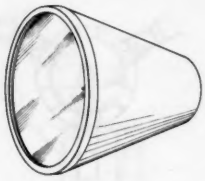




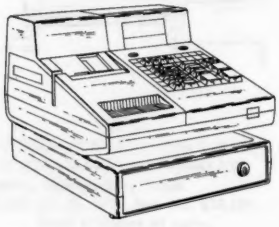
259,262
ACCESSORY HANDLE
Steve Sendecki, 11257 - 64th Ave., Delta, British Columbia, Canada (V4E 1C3)
Filed Oct. 16, 1978, Ser. No. 951,673
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—47



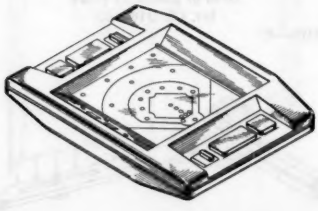
259,263
INSPECTION MIRROR FOR AUTOMOBILES OR THE LIKE
Donald J. Baysdon, 207 Woodland Dr., Jacksonville, N.C. 28540
Filed Jun. 13, 1979, Ser. No. 48,851
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—48



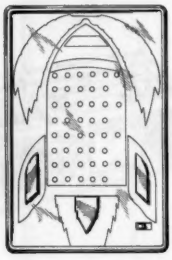
259,264
CASH REGISTER
Gerhard Schuldt, Orlinghausen, Fed. Rep. of Germany, assignor to Bielefelder Elektronik und Apparatebau GmbH, Bielefeld, Fed. Rep. of Germany
Filed Jun. 27, 1979, Ser. No. 52,628
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—4



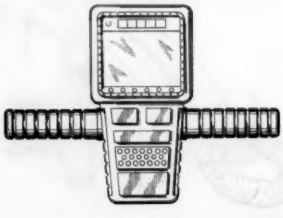
259,265
ELECTRONIC BASEBALL GAME CASING
Jeffrey P. Heuel, Riverside, and William F. Palisek, Mundelein, both of Ill., assignors to Interstate Industries, Inc., Mundelein, Ill.
Filed Jun. 28, 1979, Ser. No. 52,001
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



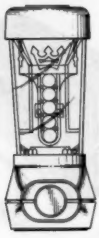
259,266
ELECTRONIC PINBALL GAME HOUSING
Jeffrey P. Heuel, Riverside; William F. Palisek, Mundelein, and Lee Radke, Lake Zurich, all of Ill., assignors to Interstate Industries, Inc., Mundelein, Ill.
Filed Jun. 28, 1979, Ser. No. 52,002
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



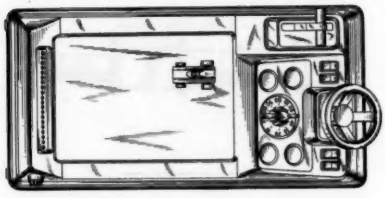
259,267
ELECTRONIC GAME CASING
Jeffrey P. Heuel, Riverside, and William F. Palisek, Mundelein, both of Ill., assignors to Interstate Industries, Inc., Mundelein, Ill.
Filed Jun. 28, 1979, Ser. No. 52,003
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



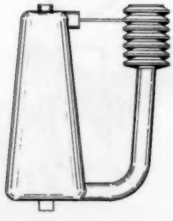
259,268
AMUSEMENT TOY
Hitoshi Itakura, Tokyo, Japan, assignor to Tomy Kogyo Co., Inc., Japan
Filed Jun. 13, 1978, Ser. No. 915,141
Term of patent years
Int. Cl. D21—*01*
U.S. Cl. D21—59



259,269
TOY VEHICLE STEERING SIMULATION DEVICE
Edward B. Bretschger, Cos Cob, Conn., and James R. Routzong, Cincinnati, Ohio, assignors to Louis Marx & Co., Inc., Stamford, Conn.
Filed Feb. 9, 1979, Ser. No. 11,012
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—124

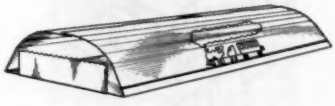


259,270
EXERCISER
Edith O. Hallerman, 41-06 Case St., Elmhurst, N.Y. 11373
Filed Sep. 20, 1978, Ser. No. 944,812
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—198

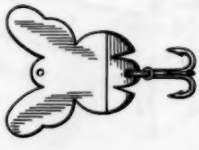


259,271
CURLING STONE
Richard A. Kushnir, 177-22 Laurie La., Tustin, Calif. 92680
Filed Aug. 30, 1978, Ser. No. 938,211
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—203

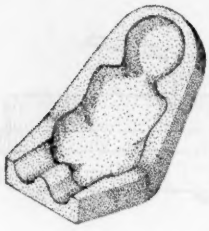
259,272
INSECT TRAP OR SIMILAR ARTICLE
Thomas E. Duffey, Miami Lakes, and Claire R. Ulanoff, Miami, both of Fla., assignors to Riviana Foods Inc., Houston, Tex.
Filed Jul. 12, 1979, Ser. No. 57,034
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



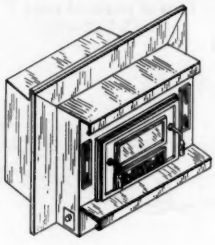
259,273
BUTTERFLY FISH LURE
William E. Hogreff, 295 D St., Apt. B, Chula Vista, Calif. 92010
Filed Aug. 27, 1979, Ser. No. 70,010
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



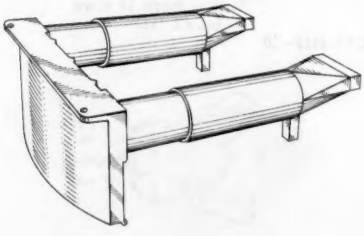
259,274
INFANT BATH SUPPORT
Darla L. Humes, 16326 Quail Park Dr., Missouri City, Tex. 77459
Filed Jun. 8, 1979, Ser. No. 46,940
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—52



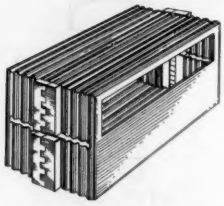
259,275
STOVE
Robert A. Berryhill, Greensboro, N.C., assignor to Autsin-Berryhill Fabricators, Inc., Greensboro, N.C.
Filed Jul. 25, 1979, Ser. No. 60,500
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—94



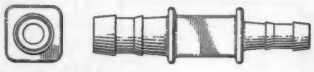
259,276
FIREPLACE FORCED AIR HEATING APPARATUS
Dannie O. Malafouris, P.O. Box 13637, Portland, Oreg. 97213, and Robert E. Jones, 3650 W. Amazon, Eugene, Oreg. 97405
Filed Sep. 22, 1978, Ser. No. 944,953
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—95



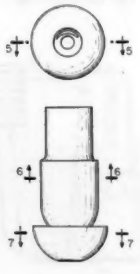
259,277
VENTILATOR HOUSING
Theodore V. McDermott, 165 Hale Ave., White Plains, N.Y. 10605
Filed Jul. 19, 1978, Ser. No. 926,264
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151



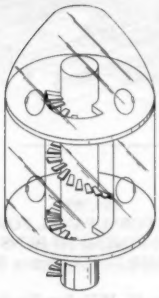
259,278
TUBING CONNECTOR FOR BLOOD AND OTHER MEDICAL APPLICATIONS
Michael R. McCaw, Costa Mesa, and Michael P. Sullivan, Elsinore, both of Calif., assignors to Shiley Inc.
Division of Ser. No. 780,640, Mar. 23, 1977, Pat. No. Des. 251,734. This application Sep. 8, 1978, Ser. No. 940,654
Term of patent 14 years
Int. Cl. D24—*99;* D23—*01*
U.S. Cl. D24—53



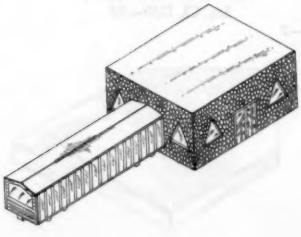
259,279
EARPLUG
Hidetaka Takeda, Fukuoka, Japan, assignor to Daiko Co., Ltd., Fukuoka, Japan
Filed Jan. 5, 1979, Ser. No. 1,340
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—67



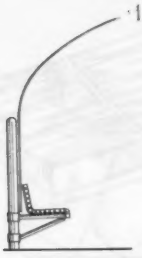
259,280
BUILDING
Samuel Mark, 709 Melville Ave., Baltimore, Md. 21218
Continuation-in-part of Ser. No. 734,247, Oct. 20, 1976, Pat. No. D. 248,496. This application Apr. 27, 1978, Ser. No. 900,492
The portion of the term of this patent subsequent to Jul. 11, 1992, has been disclaimed.
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—5



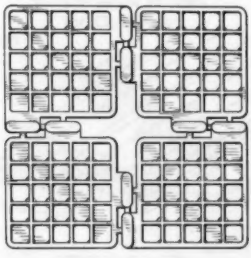
259,281
RAILROAD RESTAURANT
Gary M. Levin, 940 E. 19th St., Brooklyn, N.Y. 11230
Continuation-in-part of Ser. No. 928,387, Jul. 27, 1978. This application Apr. 30, 1980, Ser. No. 145,055
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—11



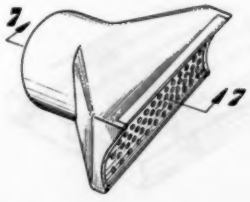
259,282
SHELTER
John R. Howey, 308 N. Tampa St., Tampa, Fla. 33602, and J. Carl Abbott, Jr., 1218 1st St., Sarasota, Fla. 33577
Filed Jun. 23, 1978, Ser. No. 918,517
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—18



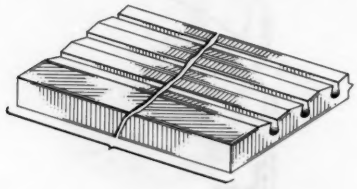
259,283
SPACING PAD FOR FLOOR SLABS
Robert G. DeClute, 174 Symons St., Toronto, Ontario, Canada (M8V 1V2)
Filed Apr. 6, 1979, Ser. No. 27,729
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—88



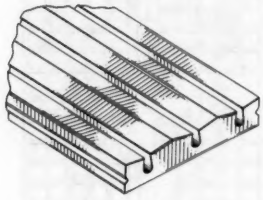
259,284
STYLING ATTACHMENT FOR BLOW DRYER
Salvatore J. Megna, 3721 Fair Oaks Blvd., Sacramento, Calif. 95825
Filed Jan. 18, 1979, Ser. No. 4,441
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—18



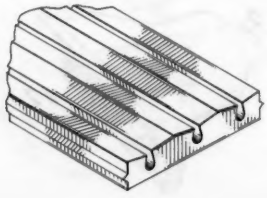
259,285
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 8, 1979, Ser. No. 64,850
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



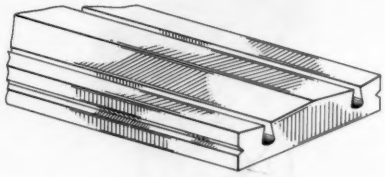
259,286
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 8, 1979, Ser. No. 64,851
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



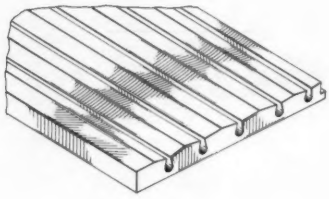
259,287
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 8, 1979, Ser. No. 64,853
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



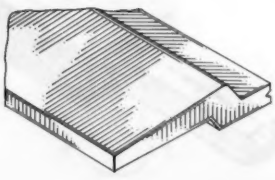
259,288
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 9, 1979, Ser. No. 65,357
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—02



259,289
FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 10, 1979, Ser. No. 65,715
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



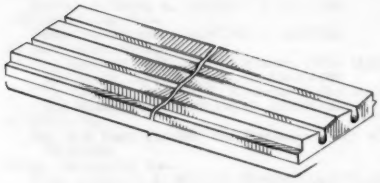
259,290
INTERLOCKING BRIDGING PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS
Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034
Filed Aug. 13, 1979, Ser. No. 65,860
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



259,291
INTERLOCKING FLUME PLATFORM PANEL FOR ANIMAL CONFINEMENT PENS

Richard E. Bunger, 5202 E. Washington St., Phoenix, Ariz. 85034

Filed Aug. 13, 1979, Ser. No. 65,973
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—2



259,292
FISH BOWL

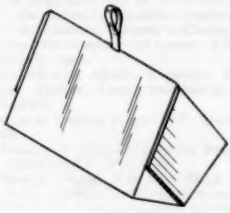
Robert Conrad, 2856 E. Oakland Park Blvd., Fort Lauderdale, Fla. 33308

Filed Mar. 5, 1979, Ser. No. 17,362
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—6

259,293
COMBINED ANIMAL LITTER SCOOPER AND CONTAINER

Herbert Cooper, 11 Toms Point La., Port Washington, N.Y. 11050

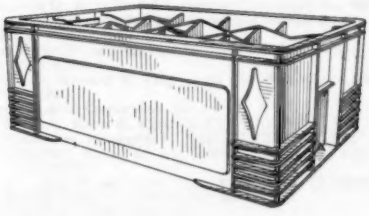
Filed Oct. 18, 1978, Ser. No. 952,580
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99



259,294
BEVERAGE CASE

Theodor M. Box, 1108 Aileen Rd., Brielle, N.J. 08730

Filed Dec. 6, 1978, Ser. No. 967,054
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D99—50



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF MAY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,268,336, Cl. 156-244.130.

AB Volvo: *See—*
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Behle, Gunter R., 4,268,010, Cl. 251-144.000.

Achelpohl, Fritz, to Windmoller & Holscher. Apparatus for making tank top bags from a web of tubular plastics film provided with side folds. 4,268,346, Cl. 156-510.000.

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AGFA-Gevaert, A.G.: *See—*
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Ahlgrim, Michael; Mietens, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, to Hoechst Aktiengesellschaft. Additive for use in metal working. 4,268,404, Cl. 252-25.000.

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Akiyama, Minoru; Akashi, Kageyasu; Shiga, Tetsuo; Ito, Yoshinobu; Kimura, Takeo; and Matsui, Takeki, to Asahi Kasei Kogyo Kabushiki Kaisha. Dry image forming material. 4,268,626, Cl. 430-620.000.

Akkerman, Antony M.; and van Leeuwen, Geertruida C., to ACF Chemiefarma N.V. 5-Unsubstituted-9,9-dimethyl-6,7-benzomorphans. 4,268,673, Cl. 546-97.000.

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Alderman, Robert J. Distance measuring system. 4,268,167, Cl. 356-1.000.

Alexander, James H. Devices for locking sliding closures. 4,268,074, Cl. 292-149.000.

Allaman, Michael C.; Bailey, Leo T.; and Hudgins, Richard E., to General Tire & Rubber Company, The. Carcass band end trimmer. 4,267,754, Cl. 83-187.000.

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Altman, Gilbert; and Bellasalma, Gerard, to Thermasol Ltd. Gasket assembly for coupling drainage outlet openings in bathtub liner installations. 4,267,609, Cl. 4-580.000.

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Augsburger, William F., to Owens-Illinois, Inc. Method of placing mask mounting pins in a CRT faceplate. 4,267,624, Cl. 29-25.150.
Aula, Howard A.; and Mauch, Jerry L., to Ford Motor Company. Engine EGR cooler. 4,267,812, Cl. 123-570.000.
Austria Email Aktiengesellschaft: *See—*
Hartmann, Ferdinand, 4,267,794, Cl. 118-50.000.
Autoclave Engineers, Inc.: *See—*
Smith, Charles W., Jr.; and Zimmerman, Franz X., 4,268,708, Cl. 13-20.000.
Automatic Systems Laboratories Limited: *See—*
Wolfendale, Peter C. F., 4,268,889, Cl. 361-292.000.
Automotive Products Limited: *See—*
Hodkinson, Harold, 4,267,697, Cl. 60-589.000.
Killian, Daniel L.; and Fraser, Peter E., 4,268,044, Cl. 277-59.000.
Young, Alastair J., 4,268,092, Cl. 303-22.00R.
Avco Corporation: *See—*
Kent, Peter; Norris, Richard M.; and Charlton, Alan J., 4,268,284, Cl. 55-269.000.
Norris, Richard M., 4,268,287, Cl. 55-306.000.
Aviram, Ari; Pennington, Keith S.; and Kuhn, Lawrence, to International Business Machines Corporation. Electrophoretical method for selectively reinking resistive ribbon thermal transfer printing ribbons. 4,268,368, Cl. 204-181.00C.
Ayata, Naoki: *See—*
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; and Sato, Yasushi, 4,268,841, Cl. 346-138.000.
Aylesworth, Edward C. Ski equipment lock. 4,267,715, Cl. 70-58.000.
Aziende Colori Nazionali Affini Acna S.p.A.: *See—*
Pieri, Giampiero; Rosati, Enzo; Battisti, Ruggero; and Burei, Giovanni, 4,268,436, Cl. 260-141.000.
B. F. Goodrich Company, The: *See—*
Patel, Pradeep V., 4,268,361, Cl. 203-9.000.
B. J. McColl & Company, Ltd.: *See—*
McColl, Bruce J., 4,267,873, Cl. 152-339.000.
B/K Patent Development: *See—*
Burch, Hadley K., 4,268,813, Cl. 337-118.000.
B. V. Arenco P.M.B.: *See—*
Rijckaert, Franciscus N., 4,267,848, Cl. 131-304.000.
Babcock-Brown Boveri Reaktor GmbH: *See—*
Stewart, Robert D., 4,268,395, Cl. 210-634.000.
Babcock-Hitachi K.K.: *See—*
Arashi, Norio; Murakami, Tadayoshi; Narato, Kiyoshi; Shiga, Masaaki; and Ishikawa, Tomihisa, 4,268,482, Cl. 422-171.000.
Backhouse, Alan J., to Imperial Chemical Industries Limited. Coating process. 4,268,547, Cl. 427-385.500.
Backx, Leo J. J.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,268,680, Cl. 548-336.000.
Bacon, James F.; and Prewo, Karl M., to United States of America, Air Force. Laser resistant ceramic composite. 4,268,562, Cl. 428-113.000.
Bacon, Roger C. Animal training and amusement device. 4,267,799, Cl. 119-29.000.
Bahl, Om P., to Research Corporation. Chorionic gonadotropin derived antigen for early pregnancy test and contraceptive vaccine. 4,268,435, Cl. 260-112.00R.
Bahrenburg, Harry H. Freeze isolation seal. 4,267,699, Cl. 62-66.000.

Bailey, Leo T.: *See*—
Allaman, Michael C.; Bailey, Leo T.; and Hudgins, Richard E., 4,267,754, Cl. 83-187.000.

Baillievier, Freddy, to N.V. Bekaert S.A. Reinforcing cords. 4,268,573, Cl. 428-295.000.

Bainard, Dean R.; and Benjamin, Martin E., to Garlock Inc. Thrust washer and combination seal and thrust washer method and apparatus. 4,268,040, Cl. 277-1.000.

Bajorek, Christopher H.: *See*—
Ahn, Kie Y.; Bajorek, Christopher H.; Ho, Paul S.; Miller, Robert J.; and Powers, John V., 4,268,584, Cl. 428-620.000.

Baldini, Alberto; Leoni, Roberto; Calloni, Angelo; and Angelini, Gianfranco, to SNIA VISCOSA Societa Nazionale Industria Applicazioni Viscosa S.p.A. Process for the dissolution of cellulose in organic solvents, solutions obtained by said process, and process for the production of formed bodies of regenerated cellulose from said solutions. 4,268,666, Cl. 536-57.000.

Banister, Arthur J.; Fielder, Andrew J.; Hauptman, Zdenek V.; and Smith, Nigel R. M., to National Research Development Corporation. Producing sulphur-nitrogen groups. 4,268,491, Cl. 423-406.000.

Baratelli, Aletha V.: *See*—
Baratelli, Charles A.; and Baratelli, Aletha V., 4,267,923, Cl. 206-5.000.

Baratelli, Charles A.; and Baratelli, Aletha V., to Itek Corporation. Eyeglass case. 4,267,923, Cl. 206-5.000.

Barbron Corporation: *See*—
Polaner, Mardy, 4,268,289, Cl. 55-486.000.

Barger, Larry N.; and McCord, Kenneth R., to American Hospital Supply Corporation. Method of flushing a medical fluid. 4,267,833, Cl. 128-214.00F.

Barger, Larry N.; McCord, Kenneth R.; and Vidal, Claude A., to American Hospital Supply Corporation. System for flushing a medical fluid. 4,267,834, Cl. 128-214.00F.

Barger, Larry N.; and McCord, Kenneth R., to American Hospital Supply Corporation. Medical flushing valve. 4,267,835, Cl. 128-214.00E.

Barlow, Malcolm; and Lundquist, Jerry R., to Ampex Corporation. Process of making silicon dioxide films for use as wear resistant coatings in video and digital magnetic recording. 4,268,369, Cl. 204-192.00D.

Barnard, William R.; and Francis, Phillip W., to Direct Power Limited. Reflectometers. 4,268,173, Cl. 356-445.000.

Barner, Richard; and Hubscher, Josef, to Hoffmann-La Roche Inc. Process for the manufacture of cholestene derivatives and novel intermediates in their manufacture. 4,268,453, Cl. 260-397.500.

Barnes, Arthur C.: *See*—
Barnes, Carl E.; and Barnes, Arthur C., 4,268,660, Cl. 528-315.000.

Barnes, Carl E.; and Barnes, Arthur C. Accelerated polymerization of 2-pyrrolidone. 4,268,660, Cl. 528-315.000.

Barnum, Thomas G.; and Smart, William A., Jr., to Bradley Corporation. Push button faucet. 4,268,008, Cl. 251-44.000.

Baronnet, Rene; and Callendret, Raymond, to Berri-Balzac. 3-Amino(1H,3H)quinazoline-2,4-dione derivatives and their therapeutic applications. 4,268,511, Cl. 424-248.570.

Barraco, Anthony J.; and Rockwell, Albert M., to Barraco, Anthony J. Cathode-heater assembly and support structure therefor. 4,268,775, Cl. 313-337.000.

Barrett, Eileen. Frosting cap. 4,267,850, Cl. 132-9.000.

Barrington, Ross B., to Engineering Components Limited. Air filters. 4,268,290, Cl. 55-521.000.

Bartunek, William; and Mallory, Henry R., to Duracell International Inc. Portable waterproof fluorescent lantern. 4,268,894, Cl. 362-158.000.

BASF Aktiengesellschaft: *See*—
Baumann, Annegrit; and Adolphi, Heinrich, 4,268,506, Cl. 424-202.000.
Horner, Michael; and Nissen, Axel, 4,268,446, Cl. 260-345.500.
Jaedicke, Hagen, 4,268,444, Cl. 260-340.700.
Kropp, Rudolf; Thoemel, Frank; Nuerrenbach, Axel; Hoffman, Werner; Wenisch, Franz; and Fuchs, Hartwig, 4,268,445, Cl. 260-345.200.
Kurze, Joachim; Fikentscher, Rolf; and Krusche, Georg, 4,268,402, Cl. 252-8.800.
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,268,300, Cl. 71-76.000.
Werther, Joachim; Fuchs, Hugo; Brand, Uwe; and Faulhaber, Friedrich R., 4,268,440, Cl. 260-239.30A.

Bassan, Benjamin, to Varian Associates, Inc. Gas ballast for oil sealed mechanical vacuum vane pump. 4,268,230, Cl. 418-15.000.

Battigelli, Jean A.: *See*—
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,268,293, Cl. 65-5.000.

Battisti, Ruggero: *See*—
Pieri, Giampiero; Rosati, Enzo; Battisti, Ruggero; and Burei, Giovanni, 4,268,436, Cl. 260-141.000.

Batz, Hans-Georg: *See*—
Klose, Sigmar; Batz, Hans-Georg; Stoltz, Michael; Hagen, Alexander; and Weimann, Gunter, 4,268,628, Cl. 435-22.000.

Bauer, Peter. Shoe with removable outsole. 4,267,650, Cl. 36-101.000.

Bauer, Walter; Fabricius, Emilio; Lanzerath, Gunther; Patzer, Helmut; and Vogele, Richard, to Borg-Warner-Stieber GmbH. Synchronizing ring. 4,267,912, Cl. 192-53.00F.

Baumann, Annegrit; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Thienylmethyl-thiophosphoric acid esters. 4,268,506, Cl. 424-202.000.

Baurle, Herbert F.; and Masak, Raymond J., to United States of America, Army. Steerable null antenna processor with gain control. 4,268,829, Cl. 343-100.0LE.

Bausch & Lomb Incorporated: *See*—
Fischer, David J.; Wooten, Idella B.; Thomas, John C.; and Reid, James A., 4,268,133, Cl. 351-161.000.

Bayer Aktiengesellschaft: *See*—
Duchardt, Karl H.; Groll, Manfred; and Wunderlich, Klaus, 4,268,267, Cl. 8-549.000.
Freitag, Dieter; Beer, Wolfgang; and Senge, Ferdinand, 4,268,648, Cl. 525-485.000.
Furstenwerth, Hauke, 4,268,438, Cl. 260-158.000.
Harnisch, Horst; and Rasche, Peter, 4,268,668, Cl. 8-685.000.
Hendricks, Udo-Winfried; Hildebrand, Dietrich; and Kuth, Robert, 4,268,266, Cl. 8-543.000.
Kruckenberg, Winfried, 4,268,439, Cl. 260-205.000.
Lehnert, Gunther; and Schiffer, Rainer, 4,268,155, Cl. 354-293.000.
Sasse, Klaus; Beck, Gunther; Eue, Ludwig; and Schmidt, Robert R., 4,268,681, Cl. 548-337.000.
Schulte-Huermann, Werner; and Hemmerich, Heinz P., 4,268,458, Cl. 564-305.000.
Wehling, Bernhard; and Bremen, Josef, 4,268,670, Cl. 542-435.000.

BBC Brown, Boveri & Co., Ltd.: *See*—
Anner, Emil; Brunner, Harry; and Meister, Hans J., 4,268,223, Cl. 416-196.00R.
Beck, Edwin; and Stocker, Arthur, 4,268,773, Cl. 310-269.000.
De Mesmaeker, Ivan, 4,268,886, Cl. 361-80.000.
Domitrovic, Josip; and Ulrich, Urban, 4,268,767, Cl. 310-53.000.
Hartmann, Max; and Thuringer, Ferdinand, 4,267,698, Cl. 60-756.000.
Hausermann, Alfred, 4,267,738, Cl. 74-8.000.
Schwarz, Hans, 4,267,740, Cl. 74-128.000.

Bean, William C.; and Tao, Thomas M., to American Can Company. Apparatus for the manufacture of fibrous webs. 4,268,235, Cl. 425-83.100.

Becchi, Raffaele; Giacone, Felice; and Accattino, Andrea, to Ing. C. Olivetti & C., S.p.A. Position transducer for a rotating member. 4,268,747, Cl. 250-231.0SE.

Bechstedt, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Clear, cold-stable liquid washing agent concentrates. 4,268,262, Cl. 8-137.000.

Beck, Edwin; and Stocker, Arthur, to BBC Brown, Boveri & Co., Ltd. Support for the field winding of field spiders. 4,268,773, Cl. 310-269.000.

Beck, Gunther: *See*—
Sasse, Klaus; Beck, Gunther; Eue, Ludwig; and Schmidt, Robert R., 4,268,681, Cl. 548-337.000.

Beck, Joseph H.; and Orilio, Paul F., to J.C. Penney Company Inc. Two-speed automatic control of supply fans. 4,267,967, Cl. 236-49.000.

Beckenbaugh, William M.; Goldman, Patricia J.; and Polakowski, Ted D., Jr., to Western Electric Company, Inc. Method for depositing a metal on a surface. 4,268,536, Cl. 427-54.100.

Becker, Clair M.: *See*—
Longenecker, Ned; Becker, Clair M.; Riegel, David P.; and Vogt, Alan G., Jr., 4,267,721, Cl. 73-1.00G.

Becker, Heinrich; Klein, Edgar; Rosendahl, Franz; and Weber, Helmut, to Kronos Titan G.m.b.H. Titanium dioxide hydrate of a particular structure and process of manufacture thereof. 4,268,422, Cl. 252-461.000.

Beckers, Karl-Dieter: *See*—
Hoffken, Erich; and Beckers, Karl-Dieter, 4,268,543, Cl. 427-230.000.

Beckman Instruments, Inc.: *See*—
Neti, Radhakrishna M., 4,268,370, Cl. 204-195.00P.
Sternberg, James C., 4,268,171, Cl. 356-341.000.

Beckord, Ulrich; and Eder, Helmut, to Siemens Aktiengesellschaft. Office machine with an electric drive motor. 4,268,768, Cl. 310-62.000.

Becton Dickinson & Company: *See*—
Reese, Max, 4,268,494, Cl. 424-1.000.

Bederke, Klaus; and Kerber, Hermann, to Herberts Gesellschaft mit beschrankter Haftung. Modified polyester imides, hardenable by energy-rich radiation, process for their production and their use for the insulation of electric wires. 4,268,659, Cl. 528-288.000.

Beecham Group Limited: *See*—
Griffin, Gerald J. L.; and Brewer, Malcolm D., 4,268,497, Cl. 424-27.000.

Beem, W. Wayne, to Outboard Marine Corporation. Mounting arrangement for electric outboard motor. 4,268,258, Cl. 440-63.000.

Beer, Wolfgang: *See*—
Freitag, Dieter; Beer, Wolfgang; and Senge, Ferdinand, 4,268,648, Cl. 525-485.000.

Behar, Marvin L. Handy bag. 4,267,869, Cl. 150-50.000.

Behle, Gunter R., to ACF Industries, Inc. Operating handle for bottom operated railway tank car valve. 4,268,010, Cl. 251-144.000.

Behringer, Hartmut; and Karrenbauer, Kurt, to Hoechst Aktiengesellschaft. Continuous diazotization of amines. 4,268,437, Cl. 260-141.000.

Belart, Juan, to ITT Industries, Inc. Spot-type disc brake. 4,267,904, Cl. 188-73.300.

Bell, Antony G., to Fairchild Camera and Instrument Corp. ROM Program security circuits. 4,268,911, Cl. 365-104.000.

Bell & Howell Company: *See*—
Grant, Frederic F.; and Martija, Henry M., 4,267,951, Cl. 226-195.000.

Hartmann, Rudolf, 4,268,119, Cl. 350-173.000.
Lehto, Eino M., 4,268,135, Cl. 353-27.00R.

Bell Telephone Laboratories, Incorporated: *See*—
Lepselter, Martin P., 4,268,374, Cl. 204-298.000.
Sard, Richard; and Walton, Kenneth R., 4,268,568, Cl. 428-209.000.

Bell, Theodore F. Bicycle fork assembly. 4,268,055, Cl. 280-278.000.

Bellasalma, Gerard: *See*—
Altman, Gilbert; and Bellasalma, Gerard, 4,267,609, Cl. 4-580.000.

Belotta, Anthony S., to Warner-Lambert Co. Adjustable shelving rack. 4,267,931, Cl. 211-153.000.

Bendix Corporation, The: *See*—
Horsting, John J., 4,267,766, Cl. 91-369.00A.
O'Connor, Bernard J.; Ficken, William H.; Carnevale, Tony R.; and Lanni, Michael J., 4,267,737, Cl. 74-5.470.
Schildkraut, Alan L.; Luca, Vincent A., Jr.; and Knapp, Carl L., 4,268,103, Cl. 339-89.00M.

Beneventano, Thomas: *See*—
Valles, Henry; Taylor, Allen R.; and Beneventano, Thomas, 4,267,735, Cl. 74-5.700.

Benjamin, Lawrence: *See*—
O'Brien, Thomas P.; and Benjamin, Lawrence, 4,268,406, Cl. 252-105.000.

Benjamin, Martin E.: *See*—
Bainard, Dean R.; and Benjamin, Martin E., 4,268,040, Cl. 277-1.000.

Bennett, Clifford D.: *See*—
Kiennolz, Charles M.; and Bennett, Clifford D., 4,267,974, Cl. 239-74.000.

Bennett, Edward D. Apparatus for producing a blank from stock material. 4,267,753, Cl. 83-124.000.

Benson, Donald H.; and Mosher, Larry, to Federal-Mogul Corporation. Abrasive saw blade for trapezoidal grooving. 4,267,814, Cl. 125-15.000.

Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, to Benteler-Werke AG. Apparatus for producing a tube with successive corrugations of different radial extensions and spacings. 4,267,718, Cl. 72-59.000.

Benteler-Werke AG: *See*—
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,267,718, Cl. 72-59.000.

Bentley Laboratories, Inc.: *See*—
Raible, Donald A., 4,268,476, Cl. 422-46.000.

Berg, Paul H., to Garrett Corporation, The. Turbocharger shaft seal arrangement. 4,268,229, Cl. 417-407.000.

Berglund, Neil C.; and Nieling, James R., to International Business Machines Corporation. Maintenance interface for a service processor-central processing unit computer system. 4,268,902, Cl. 364-200.000.

Berlyn Corporation, The: *See*—
Paquette, James P., 4,268,391, Cl. 210-236.000.

Bernard, Louis A., to Societe Nationale Industrielle Aerospatiale. Equipment for folding the blades of a main helicopter rotor. 4,268,222, Cl. 416-1.000.

Bernard, Vincent E., to Jimmy Dean Meat Company, Inc., The. Process for extruding and forming portion controlled frozen food products. 4,268,532, Cl. 426-231.000.

Bernardi, Luigi: *See*—
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,268,451, Cl. 260-376.000.

Bernhard Forster GmbH: *See*—
Forster, Rolf, 4,268,249, Cl. 433-10.000.

Berri-Balzac: *See*—
Baronnet, Rene; and Callendret, Raymond, 4,268,511, Cl. 424-248.570.

Bertus, Brent J.; McKay, Dwight L.; and Roberts, John S., to Phillips Petroleum Company. Process for reducing possibility of leaching of heavy metals from used petroleum cracking catalyst in land fills. 4,268,188, Cl. 405-128.000.

Beshenich, Paul J.: *See*—
McLaughlin, Donald L.; and Beshenich, Paul J., 4,267,915, Cl. 194-1.00N.

Betzl, Hermann; and Kuenemund, Friedrich. Electric filter circuit consisting of charge transfer device (CTD) lines. 4,268,806, Cl. 333-165.000.

BFG Glassgroup: *See*—
De Boel, Marcel, 4,268,581, Cl. 428-428.000.
Gorner, Julius K., 4,268,297, Cl. 65-104.000.

Biedermann, David A.: *See*—
Hughen, James F.; Herring, Jimmy R.; Biedermann, David A.; and Ovens, Christopher W., 4,268,827, Cl. 340-715.000.

Bielomatik Leuze GmbH & Co.: *See*—
Negro, Guido, 4,267,865, Cl. 140-92.940.

Biermann, Peter; Feucht, Rudi; and Schmidt, Manfred, to Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH. Cross country ski binding. 4,268,063, Cl. 280-615.000.

Bigelow-Sanford, Inc.: *See*—
Meredith, James E., 4,268,263, Cl. 8-149.000.

Bimczok, Rudolf: *See*—
Meschkat, Ursula; and Bimczok, Rudolf, 4,268,401, Cl. 252-8.800.

Binder, Hellmuth, to Daimler-Benz Aktiengesellschaft. Mechanically trackable road vehicle. 4,267,779, Cl. 104-247.000.

Bjorkman, Karl-Ake G., to Lumalampan AB. Process for removing mercury from solid waste material. 4,268,306, Cl. 75-81.000.

Black, Charles H.; and Eskow, Cary N., to Keene Corporation. Coin identification system. 4,267,916, Cl. 194-102.000.

Black & Decker Inc.: *See*—
Saar, David A., 4,267,914, Cl. 192-147.000.

Blaha, Robert F., to Texas Instruments Incorporated. Method of making a solid state electrical switch. 4,267,635, Cl. 29-622.000.

Blakeway, Richard S.; Blakeway, Stanley R.; and Olds, Peter J., to Blakeway, Richard S. Body support. 4,267,610, Cl. 5-60.000.

Blakeway, Stanley R.: *See*—
Blakeway, Richard S.; Blakeway, Stanley R.; and Olds, Peter J., 4,267,610, Cl. 5-60.000.

Blanco, Manuel G. Self-stabilized elevator-float for drydocking or floating any type of vessel. 4,267,788, Cl. 114-45.000.

Blendax-Werke R. Schneider GmbH & Co.: *See*—
Meschkat, Ursula; and Bimczok, Rudolf, 4,268,401, Cl. 252-8.800.

Blitchington, Frank H., to Western Electric Company, Inc. Method of and system for automatically adjusting a threshold level of a pulse generating circuit to inspect a web. 4,268,172, Cl. 356-431.000.

Bloink, Harry W.; and Huber, Walter G., to Illinois Tool Works Inc. Independent axial and radial adjustment for a gear cutter. 4,268,194, Cl. 407-22.000.

Blonder, Isaac S., to Blonder-Tongue Laboratories, Inc. Television subscriber apparatus. 4,268,860, Cl. 358-118.000.

Blonder-Tongue Laboratories, Inc.: *See*—
Blonder, Isaac S., 4,268,860, Cl. 358-118.000.

Bloomfield, Roger D., to Park Fastener Company. Film fastening system. 4,267,876, Cl. 160-392.000.

Blum, Alvin S. Method and apparatus for characterization of cells, particles, and liquids. 4,268,268, Cl. 23-230.00B.

BNA-Augustin GmbH & Co. KG: *See*—
Herzstark, Curt, 4,268,477, Cl. 422-64.000.

Boardman, Bryan J., to Boardman Energy Systems, Inc. Thermal storage material and process for making. 4,268,558, Cl. 428-71.000.

Boardman Energy Systems, Inc.: *See*—
Boardman, Bryan J., 4,268,558, Cl. 428-71.000.

Bodenseewerk Perkin-Elmer & Co. GmbH: *See*—
Huber, Bernhard W., 4,268,478, Cl. 422-68.000.

Bodig, Bernd; and Jundt, Werner, to Robert Bosch GmbH. Apparatus for generating engine speed-dependent ignition control signals. 4,268,888, Cl. 361-236.000.

Bodor, Nicholas S.; and Sloan, Kenneth B., to INTERx Research Corporation. Prodrugs for improved bioavailability of certain Δ^4-3-ketosteroidal sex hormones. 4,268,441, Cl. 260-239.500.

Boehringer Mannheim GmbH: *See*—
Klose, Sigmar; Batz, Hans-Georg; Stoltz, Michael; Hagen, Alexander; and Weimann, Gunter, 4,268,628, Cl. 435-22.000.

Bofors America, Inc.: *See*—
Spoor, Martin, 4,267,724, Cl. 73-862.650.

Bohg, Armin; and Briska, Marian, to International Business Machines Corporation. Solar collector with lens array. 4,267,823, Cl. 126-422.000.

Bohleen, Brian O.; and Hansen, Randall C., to Abex Corporation. Self-storing door handle. 4,268,077, Cl. 292-336.300.

Boiarski, Anthony A.; and Luce, Ross G., to Warner-Lambert Company. Nebulizer. 4,268,460, Cl. 261-1.000.

Boirin, Jean-Claude A. E.: *See*—
Verdenne, Serge J. C.; Petitpas, Jean-Marie L.; and Boirin, Jean-Claude A. E., 4,268,202, Cl. 414-39.000.

Bois, Daniel; and Olsfors, Jan. Tangential pick-up device for a gramophone turn-table. 4,268,039, Cl. 369-220.000.

Boling, Norman L., to Owens-Illinois, Inc. Generation of electrical energy from sunlight, and apparatus. 4,268,709, Cl. 136-247.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,267,891, Cl. 172-28.000.

Bora, F. William, Jr. Prosthetic joint. 4,267,608, Cl. 3-1.910.

Bordini, Fosco; and Mauri, Luigi. Coated polyolefin films having a low adherence to the welding bars of welding machines. 4,268,578, Cl. 428-413.000.

Borg-Warner-Stieber GmbH: *See*—
Bauer, Walter; Fabricius, Emilio; Lanzerath, Gunther; Patzer, Helmut; and Vogele, Richard, 4,267,912, Cl. 192-53.00F.

Borlan, Albert G. Flexible bellows piston seal. 4,268,042, Cl. 277-1.000.

Bouchard, Andre C.: *See*—
Hall, Harold H., Jr.; Bouchard, Andre C.; Shaffer, John W.; and Gavenonis, Thomas L., 4,267,774, Cl. 102-201.000.

Boulou, Michel: *See*—
Jacob, Guy M.; and Boulou, Michel, 4,268,842, Cl. 357-17.000.

Bourke, Donall G.; Mendelson, Richard N.; and Madruga, Luis, to International Business Machines Corporation. Data processor input-/output controller. 4,268,906, Cl. 364-200.000.

Bouwknegt, Jan; Verbeek, Hendrik J.; and Scholten, Gerard J., to U.S. Philips Corporation. Method of enveloping articles with thermoplastic strip material. 4,268,469, Cl. 264-138.000.

Bovenkerk, Harold P., to General Electric Company. Compact of boron-doped diamond and method for making same. 4,268,276, Cl. 51-295.000.

Bower, Richard K.; Rauch, August H.; and Richard, John F., to Champion International Corporation. Aluminum-filled epoxy embossing caul and means for production. 4,268,473, Cl. 264-234.000.

Bowman, Walter J.: *See*—
Neff, James A.; Fagerlie, Richard A.; and Bowman, Walter J., 4,267,862, Cl. 137-625.640.

Box, E. O., Jr.; and Farha, Floyd E., Jr., to Phillips Petroleum Company. Purification of polluted water. 4,268,399, Cl. 210-762.000.

Box, William A., to United States Steel Corporation. Method and apparatus for separating strip coil from wound construct by rotation. 4,267,984, Cl. 242-56.400.

Boyle, Francis T.; and Taylor, Michael A., to Imperial Chemical Industries Limited. 1,3-Benzoxazine trichloromethyl derivatives, compositions and use. 4,268,510, Cl. 424-248.530.

Bracesco, Roberto. Process and mold for producing padded seat backs, and the product obtained. 4,268,557, Cl. 428-71.000.

Bradley Corporation: *See—*
Barnum, Thomas G.; and Smart, William A., Jr., 4,268,008, Cl. 251-44.000.

Bradley, Mark E.: *See—*
Robertson, Charles H., Jr.; and Bradley, Mark E., 4,267,845, Cl. 128-721.000.

Bradmon, Paul J., to International Business Machines Corporation. Apparatus and method for controlling the adjustment of optical elements in an electrophotographic apparatus. 4,268,165, Cl. 355-55.000.

Bradshaw, Cyril E., to Eaton Corporation. Pneumatic vacuum regulator. 4,267,855, Cl. 137-85.000.

Bradshaw, Thomas I.: *See—*
Palmquist, Philip V.; and Bradshaw, Thomas I., 4,268,118, Cl. 350-128.000.

Brand, Uwe: *See—*
Werther, Joachim; Fuchs, Hugo; Brand, Uwe; and Faulhaber, Friedrich R., 4,268,440, Cl. 260-239.30A.

Brandenstein, Manfred: *See—*
Ernst, Horst M.; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,267,913, Cl. 192-98.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Kunkel, Heinrich; Halliger, Leonard; Stolz, Robert; and Schurger, Rainer, 4,267,920, Cl. 198-842.000.

Braun, Steven W.: *See—*
Slemon, Charles S.; and Braun, Steven W., 4,268,115, Cl. 350-96.210.

Breco Kunststoffverarbeitungs-GmbH & Co. KG: *See—*
Breher, Rudolf, 4,268,471, Cl. 264-229.000.

Breher, Rudolf, to Breco Kunststoffverarbeitungs-GmbH & Co. KG. Method of producing a reinforced endless toothed belt of synthetic plastics material having a minus tolerance of the belt circumferential length. 4,268,471, Cl. 264-229.000.

Bremen, Josef: *See—*
Wehling, Bernhard; and Bremen, Josef, 4,268,670, Cl. 542-435.000.

Breuer, Wolfram; and Siemer, Klaus, to Farbenfabriken Bayer Aktiengesellschaft. Method of and means for conveying and measuring gases for gas analysis operations. 4,268,224, Cl. 417-32.000.

Breville Holdings Pty. Limited: *See—*
O'Brien, William J., 4,268,741, Cl. 219-439.000.

Brewer, Malcolm D.: *See—*
Griffin, Gerald J. L.; and Brewer, Malcolm D., 4,268,497, Cl. 424-27.000.

Bridgestone Tire Company Limited: *See—*
Aramaki, Kuninori; and Ueda, Shigeo, 4,268,186, Cl. 404-6.000.
Komatsu, Tadaaki; Araki, Yuusuke; and Inoue, Kanji, 4,268,330, Cl. 156-111.000.

Bright Industries Inc.: *See—*
Sorrentino, Vincent P., 4,268,087, Cl. 297-273.000.

Briska, Marian: *See—*
Bohg, Armin; and Briska, Marian, 4,267,823, Cl. 126-422.000.

British-American Tobacco Company Limited: *See—*
Reid, William W., 4,267,847, Cl. 131-275.000.

Brodeur, Lester R., to Sanders Associates, Inc. Self calibration of a LORAN-C navigation receiver. 4,268,830, Cl. 343-103.000.

Broen, Harry: *See—*
Korterod, Lars; Strand, Arne; Ellingsen, Odd; and Broen, Harry, 4,267,929, Cl. 206-603.000.

Broken Hill Proprietary Company Limited, The: *See—*
Debenham, Michael; Dalli, Allan G.; and Revill, Peter L., 4,267,938, Cl. 220-268.000.

Broniewski, Bogdan M., to Occidental Research Corporation. Method of concentrating alkali hydroxide in three compartment hybrid cells. 4,268,366, Cl. 204-98.000.

Bronson, Robert E.: *See—*
Ruehle, Walter J.; and Bronson, Robert E., 4,268,012, Cl. 254-223.000.

Broussely, Michel: *See—*
Lecerf, Andre; and Broussely, Michel, 4,268,588, Cl. 429-194.000.

Brower, Boyd G.; Sindlinger, Ronald E.; and Holmes, James L., to GTE Products Corporation. Multilamp photoflash unit having grounded reflector. 4,268,891, Cl. 362-11.000.

Brown, Clarence C.; and Spector, George. Fishing lure simulating fish bait. 4,267,658, Cl. 43-42.060.

Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., to General Electric Company. Solid state relay. 4,268,843, Cl. 357-19.000.

Brown, Harold J., to Lorain Products Corporation. Semiconductor switching circuit with clamping and energy recovery features. 4,268,898, Cl. 363-20.000.

Brown, Joe R.: *See—*
Cochran, Chudleigh B., 4,267,675, Cl. 52-118.000.

Brown, Robert S.; and Satterfield, Larry S., to Milliken Research Corporation. Carpet scrubber with improved brush. 4,267,617, Cl. 15-320.000.

Brun, Bernard T.; and McKinney, John W., Jr., to Duriron Company, Inc., The. Cable guide for a tubular anode. 4,268,371, Cl. 204-196.000.

Brunner, Harry: *See—*
Anner, Emil; Brunner, Harry; and Meister, Hans J., 4,268,223, Cl. 416-196.00R.

Bruns, Klaus; and Meins, Peter, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). 13,15-Dioxabicyclo[10.5.0]heptadecanes, their preparation, and their use in perfume compositions and as an odorant. 4,268,443, Cl. 260-340.300.

Bryant, Donald E., to FarmTronics Inc. Pneumatically operated gated irrigation system. 4,267,972, Cl. 239-66.000.

Bryant, George M.: *See—*
Koenig, Harvey S.; and Bryant, George M., 4,268,641, Cl. 525-367.000.

Buck, Daniel C.; and Hess, Ricky D., to Westinghouse Electric Corp. Self-pulsed microwave power amplifier. 4,268,797, Cl. 330-277.000.

Buckman Laboratories, Inc.: *See—*
Buckman, Robert H.; Young, Peter J.; and Pulido, Miguel L., 4,268,403, Cl. 252-8.55D.

Buckman, Robert H.; Young, Peter J.; and Pulido, Miguel L., to Buckman Laboratories, Inc. Oil recovery using a dimethylamide in a fluid carrier. 4,268,403, Cl. 252-8.55D.

Bucyrus-Erie Company: *See—*
Zeldman, Maurice I., 4,268,214, Cl. 414-694.000.

Bud Antle, Inc.: *See—*
Cayton, David W., 4,268,201, Cl. 414-35.000.

Budd Company, The: *See—*
Eggert, Walter S., Jr., 4,267,895, Cl. 180-54.00A.

Budzich, Tadeusz. Load responsive valve assemblies. 4,267,860, Cl. 137-596.200.

Bugaut, Andree: *See—*
Grollier, Jean F.; Bugaut, Andree; Andrillon, Patrick; and Fourcadier, Chantal, 4,268,264, Cl. 8-410.000.

Bulteau, Gerard: *See—*
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Colliguon, Claude, 4,268,512, Cl. 424-250.000.

Bundy, Gordon L., to Upjohn Company, The. 9-Deoxy-9-methylene-5,6-didehydro-PGF$_1$ amides. 4,268,669, Cl. 542-429.000.

Burba, Christian; Volland, Hans-Gunter; and Esper, Norbert, to Schering Aktiengesellschaft. Polyvinyl chloride-plastisol having improved adhesion. 4,268,548, Cl. 427-387.000.

Burch, Hadley K., to B/K Patent Development. Resettable thermal cut-off switch. 4,268,813, Cl. 337-118.000.

Burdeska, Kurt: *See—*
Muntwyler, Rene; and Burdeska, Kurt, 4,268,693, Cl. 568-637.000.

Burei, Giovanni: *See—*
Pieri, Giampiero; Rosati, Enzo; Battisti, Ruggero; and Burei, Giovanni, 4,268,436, Cl. 260-141.000.

Burelle, Jean, to Compagnie Plastic Omnium. Tube reinforced with a synthetic material. 4,267,863, Cl. 138-109.000.

Buret, Jacqui, to Commissariat a l'Energie Atomique. Paraseismic device for the handling hood of a nuclear reactor. 4,268,355, Cl. 176-30.000.

Burgsmuller, Karl. Deep drilling tool. 4,268,197, Cl. 408-59.000.

Burke, Michael T. Briquette forming process and composition. 4,268,315, Cl. 106-84.000.

Burkl, Erich: *See—*
Ernst, Horst M.; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,267,913, Cl. 192-98.000.

Burnett-Johnston, Roy L. Hose clip apparatus. 4,267,622, Cl. 24-274.0WB.

Burton, John H.; and Mikulich, Michael A., to American Medical Systems, Inc. Penile prosthesis. 4,267,829, Cl. 128-79.000.

Busatis-Werke KG: *See—*
Schneider, Rudolf; and Schefers, Wilhelm, 4,267,689, Cl. 56-53.000.

Butcher, Jimmie J.: *See—*
Hankins, Ronald G.; and Butcher, Jimmie J., 4,268,208, Cl. 414-332.000.

Byerly, Cecil W. Heat storage sink. 4,267,881, Cl. 165-45.000.

Byers, Thomas L. Apparatus and method for modifying images on photographic film. 4,268,166, Cl. 355-84.000.

Byrt, Graham A. B.; and Chandler, Kenneth, to Masson Scott Thrissell Engineering. Cutting apparatus for continuous webs. 4,267,752, Cl. 83-74.000.

C. R. Bard, Inc.: *See—*
Kienholz, Charles M.; and Bennett, Clifford D., 4,267,974, Cl. 239-74.000.

C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,267,891, Cl. 172-28.000.

Cabeza, Maximino R. Single lever control mechanism for bicycle front and rear derailleurs. 4,267,742, Cl. 74-471.0XY.

Cain, Earl S.; Carlson, Jerome A.; and Goodrich, George E., to Tribotech. Flange mount for spherical bearing. 4,268,096, Cl. 308-15.000.

Cal West Metals: *See—*
LaPoint, Albert E., 4,267,980, Cl. 241-20.000.

Calabrese, Peter J.: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,268,597, Cl. 430-102.000.

Callendret, Raymond: *See—*
Baronnet, Rene; and Callendret, Raymond, 4,268,511, Cl. 424-248.570.

Calloni, Angelo: *See—*
Baldini, Alberto; Leoni, Roberto; Calloni, Angelo; and Angelini, Gianfranco, 4,268,666, Cl. 536-57.000.

Cameron Iron Works, Inc.: *See—*
Randall, Ross D., 4,268,011, Cl. 254-29.00A.

Camsco, Inc.: *See—*
Higgins, Bobby L.; and Johnson, Luther M., 4,268,730, Cl. 200-52.00R.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Milne, Robert, 4,268,833, Cl. 343-833.000.

Candella, Joseph S. Load supporting and handling means. 4,267,780, Cl. 108-52.100.

Cann, Peter L., to Carrier Corporation. Series compressor refrigeration circuit with liquid quench and compressor by-pass. 4,268,291, Cl. 62-117.000.

Canon Kabushiki Kaisha: *See*—
Aizawa, Hiroshi; Uchidoi, Masanori; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,268,152, Cl. 354-234.000.
Date, Nobuaki; Senuma, Michio; and Yoshida, Syozo, 4,268,147, Cl. 354-147.000.
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; and Sato, Yasushi, 4,268,841, Cl. 346-138.000.
Kawamura, Naoto, 4,268,871, Cl. 358-298.000.
Kitamura, Takashi; Sakamaki, Hisashi; and Kawamura, Naoto, 4,268,870, Cl. 358-296.000.
Nakahata, Kimio; Aguro, Yoshinori; and Tamura, Yasuyuki, 4,268,161, Cl. 355-3.0CH.
Sugiura, Yoji; and Kiuchi, Masayoshi, 4,268,153, Cl. 354-234.000.
Uchiyama, Takashi; Tsunekawa, Tokuichi; and Kiyohara, Takehiko, 4,268,139, Cl. 354-34.000.

Capaccio, Giancarlo; and Ward, Ian M., to National Research Development Corporation. Polymer materials. 4,268,470, Cl. 528-502.000.

Caparoni, Louis J.: *See*—
Rauchut, Robert F.; and Caparoni, Louis J., 4,268,823, Cl. 340-570.000.

Carabateas, Philip M.: *See*—
Diana, Guy D.; and Carabateas, Philip M., 4,268,678, Cl. 548-247.000.

Carlingswitch, Inc.: *See*—
Sorenson, Richard W., 4,268,734, Cl. 200-302.000.

Carlisle Corporation: *See*—
Wagner, Harry H., 4,268,467, Cl. 264-111.000.

Carlson, Jerome A.: *See*—
Cain, Earl S.; Carlson, Jerome A.; and Goodrich, George E., 4,268,096, Cl. 308-15.000.

Carlton, Peter A.: *See*—
Childs, William H.; and Carlton, Peter A., 4,268,803, Cl. 333-12.000.

Carnevale, Tony R.: *See*—
O'Connor, Bernard J.; Ficken, William H.; Carnevale, Tony R.; and Lanni, Michael J., 4,267,737, Cl. 74-5.470.

Carpenter, Donald C. Universal carrier attachment for pick-up vans. 4,268,083, Cl. 296-10.000.

Carrier Corporation: *See*—
Cann, Peter L., 4,268,291, Cl. 62-117.000.
Leonard, Gary S.; and Zinsmeyer, Thomas M., 4,267,705, Cl. 62-195.000.

Carroll, Frank E., to Carroll Research, Inc. Insulated roof structure. 4,267,678, Cl. 52-302.000.

Carroll Research, Inc.: *See*—
Carroll, Frank E., 4,267,678, Cl. 52-302.000.

Carter, Gilbert T.: *See*—
Perrett, Thomas R.; and Carter, Gilbert T., 4,267,939, Cl. 220-318.000.

Carter, Walter L. Methods of forming and methods of controlling a pivotal mirror assembly. 4,268,125, Cl. 350-320.000.

Casey, John F.; and Vyne, Robert L., to Motorola, Inc. Preferred device orientation on integrated circuits for better matching under mechanical stress. 4,268,848, Cl. 357-60.000.

Caterpillar Tractor Co.: *See*—
Chambers, Robert O.; and Stedman, Robert N., 4,267,749, Cl. 74-690.000.
Grob, Russel W., 4,268,792, Cl. 328-24.000.
Martin, Dean W., 4,268,019, Cl. 269-43.000.
Muller, Thomas P., 4,267,674, Cl. 52-115.000.
Myers, Jimmy D.; and Fratzke, Lawrence F., 4,267,890, Cl. 169-75.000.
Stockner, Alan R.; and Stratton, Michael K., 4,267,977, Cl. 239-132.300.

Caughey, Robert A., to Forest Fuels, Inc. Gasification retort. 4,268,274, Cl. 48-111.000.

Cavalier Carpets: *See*—
Moore, Mack W., Jr., 4,268,551, Cl. 428-17.000.

Cavazza, Claudio. Method of treating abnormal lipoprotein ratios with acylcarnitine. 4,268,524, Cl. 424-311.000.

Cayton, David W., to Bud Antle, Inc. Unitizing system for produce cartons and the like. 4,268,201, Cl. 414-35.000.

CBS Inc.: *See*—
Green, George R. J., 4,268,864, Cl. 358-166.000.

Central Welding Supply Co., Inc.: *See*—
Sanders, Harold D., 4,268,740, Cl. 219-137.510.

CGEE Alsthom: *See*—
Debaigt, Jean, 4,268,108, Cl. 339-198.0GA.

Challenge-Cook Bros., Incorporated: *See*—
Freze, Benjamin H., 4,268,247, Cl. 432-21.000.

Chambers, Robert O.; and Stedman, Robert N., to Caterpillar Tractor Co. Compact reversible variable speed transmission and differential. 4,267,749, Cl. 74-690.000.

Champion International Corporation: *See*—
Bower, Richard K.; Rauch, August H.; and Richard, John F., 4,268,473, Cl. 264-234.000.

Chandler, Kenneth: *See*—
Byrt, Graham A. B.; and Chandler, Kenneth, 4,267,752, Cl. 83-74.000.

Charlton, Alan J.: *See*—
Kent, Peter; Norris, Richard M.; and Charlton, Alan J., 4,268,284, Cl. 55-269.000.

Charron, Jean-Claude, to Saunier Duval. Control mechanism for a gas-fired water heater. 4,267,820, Cl. 126-351.000.

Chase, Verlin R. Device and method for replacing rope carriers on dryer rolls of paper making machines. 4,267,631, Cl. 29-426.100.

Chatwin, Francis R. Apparatus for vaporizing and atomizing liquids. 4,267,976, Cl. 239-102.000.

Chauvin, Yves: *See*—
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,268,701, Cl. 585-329.000.

Chekirda, Russell F.; Murphy, Randall T.; and Lyszczarz, Walter, to Lear Siegler, Inc. Support assembly for vehicle seat. 4,267,999, Cl. 248-418.000.

Chemische Werke Huls Aktiengesellschaft: *See*—
Franz, Gerhard; Nierlich, Franz; and Ratajczak, Hans-Josef, 4,268,448, Cl. 260-346.750.
Lange, Erhard; and Hausen, Manfred Z., 4,268,695, Cl. 568-864.000.

Chemplex Company: *See*—
Hoff, Raymond E., 4,268,418, Cl. 252-429.00B.

Chen, Laurence. Disposable camera with simplified film advance and indicator. 4,268,150, Cl. 354-206.000.

Chevron Research Company: *See*—
Foster, Michael S., 4,268,376, Cl. 208-120.000.
Toland, William G., 4,268,572, Cl. 428-281.000.

Chiao, Wen B.: *See*—
Ray-Chaudhuri, Dilip K.; Chiao, Wen B.; and Schoenberg, Jules E., 4,268,656, Cl. 528-103.000.

Chibana, Masanobu: *See*—
Futamase, Tsuyoshi; and Chibana, Masanobu, 4,267,763, Cl. 84-1.220.

Chicago Bridge & Iron Company: *See*—
Sikora, Orwill G., 4,268,246, Cl. 432-4.000.

Chicago Pneumatic Tool Company: *See*—
Wallace, William K.; Giardino, David A.; and van Nederynen, Gerrit, 4,267,747, Cl. 74-526.000.

Chietti, Giovanni, to Macchine Tessili Circolari MATEC S.p.A. Circular hosiery machine and the like, having simplified program control means. 4,267,708, Cl. 66-56.000.

Children's Hospital Medical Center: *See*—
Gabbay, Kenneth H.; and Gallop, Paul M., 4,268,270, Cl. 23-230.300.

Childs, William H.; and Carlton, Peter A., to Communications Satellite Corporation. Periodic lid for integrated circuit. 4,268,803, Cl. 333-12.000.

Chino, Koichi: *See*—
Ga, Eiichi; Chino, Koichi; Kikuchi, Makoto; Oda, Akira; and Horiuchi, Susumu, 4,268,409, Cl. 252-301.10W.

Chino, Yasuyoshi: *See*—
Miyaguchi, Akinori; Morita, Yasuomi; and Chino, Yasuyoshi, 4,268,427, Cl. 260-23.70C.

Chisso Corporation: *See*—
Ogawa, Tetsuya; Yoshizaki, Norio; Katsuragi, Tadakatsu; Nakamura, Makoto; and Shiiba, Kiyonori, 4,268,362, Cl. 203-28.000.

Chittenden, Jeremy B. Valve actuating equipment. 4,268,007, Cl. 251-30.000.

Chittick, Donald E., to Pyrenco, Inc. Apparatus for converting organic material into fuel. 4,268,275, Cl. 48-111.000.

Christian, Francis R. Casket ornament structure. 4,267,623, Cl. 27-2.000.

Christian, J. Robert; and Mink, James W., to United States of America, Army. Multipath discriminating antenna system. 4,268,832, Cl. 343-786.000.

Christiansen, M. Tyrone: *See*—
Eventoff, Franklin N.; and Christiansen, M. Tyrone, 4,268,815, Cl. 338-69.000.

Chu, Pak-Jong, to Northern Telecom Limited. Multiple cantilever spring contact switch. 4,268,726, Cl. 179-164.000.

Ciba-Geigy AG: *See*—
Leppard, David G.; and Rasberger, Michael, 4,268,593, Cl. 430-17.000.
Tschopp, Paul, 4,268,591, Cl. 430-17.000.
Tschopp, Paul, 4,268,592, Cl. 430-17.000.

Ciba-Geigy Corporation: *See*—
Muntwyler, Rene; and Burdeska, Kurt, 4,268,693, Cl. 568-637.000.
Raspet, Thomas M., 4,268,408, Cl. 252-182.000.
Schafer, Paul; Abel, Heinz; and Mayer, Fritz, 4,268,686, Cl. 560-91.000.

Cieslak, David M.: *See*—
Cieslak, Patrick J.; and Moran, Michael J., 4,267,768, Cl. 493-203.000.

Cieslak, Patrick J.; and Moran, Michael J., to Cieslak, David M., a part interest. Process for fabricating a reclosable bag. 4,267,768, Cl. 493-203.000.

Citizen Watch Co., Ltd.: *See*—
Mizutani, Nagao; Okawara, Yasuo; and Shimazaki, Toshikazu, 4,268,182, Cl. 400-247.000.
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.

Claesson, Per-Goran. Device for generating an electric output signal in response to the positioning of a mechanical member. 4,267,819, Cl. 126-285.00B.
Clark, Hamilton, Jr., to Harris Corporation. Housing acoustical amplifier. 4,268,718, Cl. 179-1.00E.
Clarke, John T.: *See*—
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,268,565, Cl. 428-161.000.
Clausen, Jack L. Secure equipment rack. 4,268,099, Cl. 312-280.000.
Clay, Wallace C.: *See*—
Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., 4,268,869, Cl. 358-287.000.
Claypool, Ralph J.: *See*—
Laughlin, Sidney J.; and Claypool, Ralph J., 4,268,294, Cl. 65-10.000.
Clint, Inc.: *See*—
Marc, Michel, 4,268,238, Cl. 425-174.80E.
Cloninger, Grace. Method for treating hair to prevent dryness. 4,268,500, Cl. 424-70.000.
CMI Corporation: *See*—
Hankins, Ronald G.; and Butcher, Jimmie J., 4,268,208, Cl. 414-332.000.
CMI Incorporated: *See*—
Fritzlen, Jack D.; Thul, Fred M.; and Vogel, Douglas R., 4,268,751, Cl. 250-343.000.
Cochran, Chudleigh B., to Brown, Joe R. Well working rig. 4,267,675, Cl. 52-118.000.
Cocron, Istvan; Huber, Theodor; and Ruf, Wolfgang, to AGFA-Gevaert, A.G. Radiation-emissive focussing system with integration of the signals produced by the system's detector arrangement. 4,268,137, Cl. 354-23.00D.
Coherent, Inc.: *See*—
Johnston, Thomas F., Jr.; and Proffitt, William P., 4,268,800, Cl. 331-94.50C.
Cole, John W.: *See*—
Shuck, William D.; Lind, Frederick D.; and Cole, John W., 4,268,398, Cl. 210-758.000.
Cole National Corporation: *See*—
Sorrells, Frank D., 4,267,672, Cl. 51-284.00R.
Cole, Robert N., to Exxon Research & Engineering Co. Reactor with extractable feed nozzle. 4,268,017, Cl. 266-265.000.
Colgate-Palmolive Company: *See*—
Fitzgerald, Harry G.; and Patience, Donald, 4,268,340, Cl. 156-296.000.
Colle, Ervin R., to Raymond International Builders, Inc. Concrete wall construction. 4,268,192, Cl. 405-239.000.
Collignon, Claude: *See*—
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, 4,268,512, Cl. 424-250.000.
Collins, Andrew P. Recreational basketball apparatus with multiple moving goals. 4,268,029, Cl. 272-3.000.
Collins, Arthur H. Method and apparatus for raising plant and animal life in a marine environment. 4,267,798, Cl. 119-3.000.
Colombo, Paolo: *See*—
Radici, Pierino; Custro, Sergio; and Colombo, Paolo, 4,268,643, Cl. 525-400.000.
Colson, James G.; Cooke, Victor F. G.; Day, F. Howard; and Fifolt, Michael J., to Hooker Chemicals & Plastics Corp. Process for the preparation of paraphenoxybenzoylchloride. 4,268,457, Cl. 260-544.00P.
Combustion Engineering, Inc.: *See*—
Formanek, Frank J.; and Schukei, Glen E., 4,268,357, Cl. 176-78.000.
Gralton, Gary W., 4,267,882, Cl. 165-83.000.
Rooker, Mitchel L., 4,268,277, Cl. 55-1.000.
Combustion Unlimited Incorporated: *See*—
Straitz, John F., III, 4,268,245, Cl. 431-202.000.
Commissariat a l'Energie Atomique: *See*—
Buret, Jacqui, 4,268,355, Cl. 176-30.000.
Communications Satellite Corporation: *See*—
Childs, William H.; and Carlton, Peter A., 4,268,803, Cl. 333-12.000.
Compagnie Plastic Omnium: *See*—
Burelle, Jean, 4,267,863, Cl. 138-109.000.
Compton, Leslie E., to Occidental Research Corporation. Method for removing nitrogen from shale oil by hydrogenation and liquid sulfur dioxide extraction. 4,268,378, Cl. 208-254.00R.
Conax Corporation: *See*—
Naab, Carlton W.; and Jankowiak, Roman, 4,267,854, Cl. 137-72.000.
Congdon, John C., to Magnavox Government and Industrial Electronics Co. Directional hydrophone suitable for flush mounting. 4,268,912, Cl. 367-163.000.
Container Corporation of America: *See*—
House, Richard F.; Kohler, Karl A.; and Lewis, Philip W., 4,267,956, Cl. 229-30.000.
Continental Pharma: *See*—
Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.
Contraves Goerz Corporation: *See*—
Rettew, Richard, 4,267,671, Cl. 51-135.0BT.
Cook, James A., Jr.: *See*—
Keim, William A.; and Cook, James A., Jr., 4,268,456, Cl. 260-455.00R.
Cooke, Victor F. G.: *See*—
Colson, James G.; Cooke, Victor F. G.; Day, F. Howard; and Fifolt, Michael J., 4,268,457, Cl. 260-544.00P.
Coombs, Peter J. Cyclone vacuum cleaning apparatus. 4,268,288, Cl. 55-337.000.
Cooper Industries, Inc.: *See*—
Mayer, James R., 4,267,892, Cl. 173-43.000.
Coors Container Company: *See*—
Stirbis, James S., 4,267,771, Cl. 101-40.000.
Copie, Fernand. Load lifting and carrying machine. 4,268,216, Cl. 414-719.000.
Coppa, Richard J.; Ellin, Seymour; and Stempeck, John W., to Polaroid Corporation. Follow focus flash arrangement. 4,268,138, Cl. 354-27.000.
Copyer Co., Ltd.: *See*—
Katagiri, Kazuharu; Ishikawa, Shozo; Ohta, Shigeto; and Kitahara, Makoto, 4,268,595, Cl. 430-48.000.
Cormet, Rene: *See*—
Leclerc, Jacques; Cormet, Rene; and Marcus, Guy, 4,268,305, Cl. 75-48.000.
Corning Glass Works: *See*—
Gulati, Suresh T.; Smith, Norman A.; and Spycher, Anton A., 4,268,134, Cl. 351-163.000.
Corwin, Howard R.; and Jones, Charles, to Curtiss-Wright Corporation. Multi-unit rotary piston mechanism and mainshaft coupling therefor. 4,268,231, Cl. 418-60.000.
Cory, Halsey W., to Force Control Industries, Inc. Clutch-brake unit. 4,267,911, Cl. 192-18.00A.
Cosper, David R.; and Soll, Patricia R., to Nalco Chemical Company. Method of reducing soluble starch in broke repulping using a dual polymer combination. 4,268,352, Cl. 162-191.000.
Cottrell, Merlyn F.; Gauthier, Dale J.; and Miller, Lester C., to E. R. Wagner Manufacturing Company. Resistance heater assembly. 4,268,742, Cl. 219-532.000.
Coughlin, Robert W. Method for electrowinning metals. 4,268,363, Cl. 204-39.000.
Coulston, Ellwin L., to Kawneer Company, Inc. Heat insulating flashing. 4,267,673, Cl. 52-97.000.
Count Numbering Machine, Inc.: *See*—
Maitland, Roy, 4,267,772, Cl. 101-103.000.
Couttet, Andre: *See*—
Eranian, Armand; Dubois, Jean C.; Couttet, Andre; and Datamanti, Evelyne, 4,268,590, Cl. 430-5.000.
Cowart, Ronald W., to University of Texas System, The. Realtime radiation exposure monitor and control apparatus. 4,268,750, Cl. 250-315.100.
Cragin, John J. Bullrope. 4,267,685, Cl. 54-1.000.
Crankshaw, Gary K.; and Erber, Roger A., to Upjohn Company, The. Closure for large-volume vial. 4,267,925, Cl. 206-221.000.
Cribbs, Robert W.; Lamb, Billy L.; and DeLacy, Thomas J., to Ford Aerospace & Communications Corporation. Swept frequency radar system employing phaseless averaging. 4,268,828, Cl. 343-5.00W.
Critikon, Inc.: *See*—
Kontos, Stavros B., 4,267,846, Cl. 128-765.000.
Cronin, Albert T.: *See*—
Widmayer, Henry J.; and Cronin, Albert T., 4,268,105, Cl. 339-147.00R.
Crosby, Gary A.: *See*—
Rapp, Walter W.; and Crosby, Gary A., 4,268,389, Cl. 210-195.300.
Croset, Michel; and Velasco, Gonzalo, to Thomson-CSF. Process for growing a superficial dielectric structure upon a substrate, made of a chemical compound, comprising at least two elements. 4,268,535, Cl. 427-38.000.
Crouse, Ronald J.; and Wade, Edward C., to TRW Inc. Optical transceiver. 4,268,756, Cl. 250-551.000.
Crown Zellerbach Corporation: *See*—
Reba, Imants, 4,267,795, Cl. 118-302.000.
Culver, William H.: *See*—
Schmadel, Donald; Culver, William H.; and Gould, Gordon, 4,268,116, Cl. 350-96.290.
Cunningham, Daniel: *See*—
Shinozaki, Tamotsu; Gallant, Thomas E.; Deane, Robert S. D.; and Cunningham, Daniel, 4,267,641, Cl. 33-365.000.
Cunningham, William T. J. Storm drain sump filter. 4,268,390, Cl. 210-232.000.
Curchod, Donald B.; and Nelson, Hoyt H., to Nortron Corporation. Wheel balancing system. 4,267,730, Cl. 73-462.000.
Curry, Byron V., Jr. Composite container structure. 4,267,928, Cl. 206-583.000.
Curtin, Daniel J., to Atlantic Richfield Company. Reduction of the fouling potential of high sodium coal. 4,268,271, Cl. 44-1.00R.
Curtiss-Wright Corporation: *See*—
Corwin, Howard R.; and Jones, Charles, 4,268,231, Cl. 418-60.000.
Cuscovitch, John F. Mobile cleaning apparatus having adjustable window closure panel assembly. 4,267,618, Cl. 15-339.000.
Cusi, Antoine. Expander. 4,268,032, Cl. 272-137.000.
Custro, Sergio: *See*—
Radici, Pierino; Custro, Sergio; and Colombo, Paolo, 4,268,643, Cl. 525-400.000.
Cuvelier, Michel C., to American Electric Fusion Co., Inc. Induction welding apparatus for manufacture of tubing. 4,268,736, Cl. 219-8.500.
Cybar, Inc.: *See*—
Sanderford, Dorsey W., 4,267,885, Cl. 166-250.000.

Czyzewski, Ted S.: *See*—
Minifie, Bernard W.; and Czyzewski, Ted S., 4,267,703, Cl. 62-123.000.

Dabisch, Wolfgang. Bodies with reversibly variable temperature-dependent light absorbence. 4,268,413, Cl. 252-408.000.

Dahlke, Hermann: *See*—
Muxfeldt, Hans; and Dahlke, Hermann, 4,268,495, Cl. 424-1.000.

Dai Nippon Toryo Co., Ltd.: *See*—
Sakakibara, Takao; and Okazaki, Haruhiko, 4,268,542, Cl. 427-195.000.

Daicel Ltd.: *See*—
Suzuki, Hajime; Masuda, Ikuo; and Kosaka, Masaki, 4,268,579, Cl. 428-413.000.

Daigo, Kunihiro: *See*—
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.

Daikin Kogyo Co., Ltd.: *See*—
Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, 4,268,653, Cl. 526-255.000.

Daimler-Benz Aktiengesellschaft: *See*—
Binder, Hellmuth, 4,267,779, Cl. 104-247.000.
Pfeiffer, Peter; and Tomforde, Johann, 4,268,892, Cl. 362-83.000.
Springer, Willi, 4,267,811, Cl. 123-432.000.

Daitoku, Koichi, to Nippon Kogaku K.K. Self-timer device for a camera. 4,268,154, Cl. 354-238.000.

Dalli, Allan G.: *See*—
Debenham, Michael; Dalli, Allan G.; and Revill, Peter L., 4,267,938, Cl. 220-268.000.

Dama, Anthony: *See*—
Schomburg, Fay G., 4,268,031, Cl. 272-128.000.

Dang Vu, Quang; Juguin, Bernard; Torck, Bernard; and Hellin, Michel, to Institut Francais du Petrole. Process for producing gasoline of high octane number and particularly lead free gasoline, from olefininc C_3-C_4 cuts. 4,268,700, Cl. 585-302.000.

Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, to Institut Francais du Petrole. Process for producing high octane gasoline and particularly lead-free gasoline. 4,268,701, Cl. 585-329.000.

Daniel Doncaster & Sons Limited: *See*—
Willis, Alan W., 4,268,322, Cl. 148-12.70A.

Dansk Industri Syndikat A/S: *See*—
Mogensen, Vagn; Jorgensen, Villy E.; and Krebs, Peter, 4,267,878, Cl. 164-187.000.

Dany, Franz-Josef: *See*—
Ahlgrim, Michael; Mietens, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,268,404, Cl. 252-25.000.

Datamanti, Evelyne: *See*—
Eranian, Armand; Dubois, Jean C.; Couttet, Andre; and Datamanti, Evelyne, 4,268,590, Cl. 430-5.000.

Date, Nobuaki; Senuma, Michio; and Yoshida, Syozo, to Canon Kabushiki Kaisha. Focal plane shutter device. 4,268,147, Cl. 354-147.000.

Daur, Rolf; Hoffmann, Herbert; and Schmid, Gunter, to Licentia Patent-Verwaltungs-G.m.b.H. Soldering to a gold member. 4,268,585, Cl. 428-622.000.

d'Auria, Luigi; and Maillot, Philippe, to Thomson-CSF. Optical connector for printed circuit card. 4,268,114, Cl. 350-96.200.

Davey, Keith S. A.; and Ware, Rowland M., to Metals Research Limited. Improvements in and relating to the growth of crystalline material. 4,268,483, Cl. 422-246.000.

David Brown Tractors Limited: *See*—
Ashfield, Herbert E., 4,267,807, Cl. 123-323.000.

Davidson, James D. Shield for a window. 4,267,666, Cl. 49-63.000.

Davidsson, Peter: *See*—
Jarl, Stig; Eker, Per-Olof; and Davidsson, Peter, 4,267,741, Cl. 74-339.000.

Davis, George B.; and Irving, Robert W., to Environmental Air Control, Inc. Prefabricated knockdown clean room. 4,267,769, Cl. 98-33.00A.

Davis, Larry: *See*—
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,268,515, Cl. 424-267.000.

Davis, Murray W.; Diedzic, Matthew J.; Knapp, Robert F.; and Whitney, Bruce F., to Davis, Murray W.; and Diedzic, Matthew J. Real-time parameter sensor-transmitter. 4,268,818, Cl. 340-870.380.

Davis, Rachel D., deceased; and by First Citizens Bank & Trust Co., executor. Nutritive composition and method of preparing same. 4,268,529, Cl. 426-72.000.

Davis, Vernon E. Recreational vehicle wind stabilizer. 4,268,066, Cl. 280-763.000.

Davy International (Minerals & Metals) Ltd.: *See*—
Gavin, Edward, 4,268,484, Cl. 422-259.000.

Dawson, Harry, to G. P. Worsley & Company Limited. Fluid bed furnaces. 4,268,244, Cl. 431-170.000.

Dawson, Terry: *See*—
Donley, Robert P.; and Dawson, Terry, 4,268,713, Cl. 174-52.0PE.

Day, F. Howard: *See*—
Colson, James G.; Cooke, Victor F. G.; Day, F. Howard; and Fifolt, Michael J., 4,268,457, Cl. 260-544.00P.

Deane, Robert S. D.: *See*—
Shinozaki, Tamotsu; Gallant, Thomas E.; Deane, Robert S. D.; and Cunningham, Daniel, 4,267,641, Cl. 33-365.000.

Dearing, Le Roy M.; and Wiegand, Edgar D., to L. M. Dearing Associates, Inc. Photographic camera with provision for recording supplemental data. 4,268,143, Cl. 354-106.000.

Debaigt, Jean, to CGEE Alsthom. Locking arrangement for fixing a terminal block. 4,268,108, Cl. 339-198.0GA.

Debenham, Michael; Dalli, Allan G.; and Revill, Peter L., to Broken Hill Proprietary Company Limited, The. Resealable pressure release closures. 4,267,938, Cl. 220-268.000.

De Boel, Marcel, to BFG Glassgroup. Fire-screening glazing panels and method of manufacturing same. 4,268,581, Cl. 428-428.000.

Deborah Fluidised Combustion Limited: *See*—
Robinson, Edwin, 4,267,801, Cl. 122-4.00D.

Decker, Herbert, to Triumph-Werke Nurnberg A.G. Ink and error correction ribbon assembly. 4,268,181, Cl. 400-208.000.

Deffeyes, Robert J.; and Tyler, Wesley R., to Graham Magnetics Incorporated. Method of producing acicular metal crystals. 4,268,302, Cl. 75-0.5AA.

De Groff, James T.: *See*—
Feldman, Martin L.; and De Groff, James T., 4,268,431, Cl. 260-40.00R.

Dehn, Rudolph A.: *See*—
Eichelberger, Charles W.; Dehn, Rudolph A.; Gdula, Michael; and Wojnarowski, Robert J., 4,268,779, Cl. 315-105.000.

DeLacy, Thomas J.: *See*—
Cribbs, Robert W.; Lamb, Billy L.; and DeLacy, Thomas J., 4,268,828, Cl. 343-5.00W.

Delattre, Jean. Tile for the construction of walls or diverse disassemblable surfaces. 4,267,680, Cl. 52-384.000.

Delta-X Corporation: *See*—
McKee, Fount E., 4,268,228, Cl. 417-390.000.

De Mesmaeker, Ivan, to BBC Brown, Boveri & Co., Ltd. Distance protection apparatus for electrical lines. 4,268,886, Cl. 361-80.000.

Dempster Systems Inc.: *See*—
Toppins, Charles R.; Williams, Cecil L.; and Korth, Otto H., 4,268,053, Cl. 280-154.000.

Deneke, Klaus; and Lenz, Arnold, to Dynamit Nobel Aktiengesellschaft. Process for the separation of radioactive impurities of baddeleyite. 4,268,485, Cl. 423-3.000.

Dengyosha Engineering Co., Inc.: *See*—
Yoshikawa, Norihiro, 4,268,385, Cl. 210-150.000.

Denyo Kabushiki Kaisha: *See*—
Takeda, Masanobu; and Anzai, Shigeaki, 4,268,788, Cl. 322-59.000.

Deshaw, Walter R., to Keeler Brass Company. Outside rear view mirror. 4,268,122, Cl. 350-307.000.

DeSmet, Gregory L., to Fischbach and Moore, Inc. Magnetic display device. 4,268,821, Cl. 340-378.100.

Determann, Helmut: *See*—
Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, 4,268,367, Cl. 204-149.000.

Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co. Ltd. Musical tone generator utilizing digital sliding formant filter. 4,267,761, Cl. 84-1.010.

Deveaux, Rene, to Societe d'Assistance Technique pour Produits Nestle S.A. Mould for packaging desserts. 4,268,002, Cl. 249-127.000.

Dewaele, Daniel C. C., to Staalkat B.V. Egg candling device. 4,268,168, Cl. 356-58.000.

Diamond, Edward H., to Grumman Energy Systems, Inc. Integrated solar energy system. 4,267,822, Cl. 126-417.000.

Diamond International Corporation: *See*—
Struble, Glenn E., 4,267,955, Cl. 229-16.00R.

Diamond Shamrock Corporation: *See*—
Nemeth, William R., 4,268,310, Cl. 106-38.350.

Diana, Guy D.; and Carabateas, Philip M., to Sterling Drug Inc. 4-(Arylaliphatic)isoxazoles. 4,268,678, Cl. 548-247.000.

Dickey-john Corporation: *See*—
Kaplan, Dov, 4,268,825, Cl. 340-684.000.

Dickson, Peter C., to Dunlop Limited. Resilient structures. 4,267,681, Cl. 52-664.000.

Didier-Werke AG: *See*—
Eschner, Axel; Leupold, Hermann; and Jeschke, Peter, 4,268,016, Cl. 266-236.000.
Luhrsen, Ernst; Sussmuth, Godehard; and Walden, Klaus, 4,268,015, Cl. 266-236.000.

Diedzic, Matthew J.: *See*—
Davis, Murray W.; Diedzic, Matthew J.; Knapp, Robert F.; and Whitney, Bruce F., 4,268,818, Cl. 340-870.380.

Dilg, Walter C., to Dresser Industries, Inc. Railway car rotary coupler. 4,267,935, Cl. 213-72.000.

Dinklage, Horst: *See*—
Fink, Herbert; Suetterlin, Norbert; Dinklage, Horst; and Tilch, Willi, 4,268,549, Cl. 427-393.500.

Direct Power Limited: *See*—
Barnard, William R.; and Francis, Phillip W., 4,268,173, Cl. 356-445.000.

Djordjevic, Ilija; and Ritter, Ernst, to Robert Bosch GmbH. Centrifugal RPM governor for fuel injected engines. 4,267,808, Cl. 123-367.000.

Dobo, Emerick J.; and Graham, Tommy E., to Monsanto Company. Inorganic anisotropic hollow fibers. 4,268,278, Cl. 55-16.000.

Dr. C. Otto & Comp. GmbH: *See*—
Haese, Egon, 4,268,489, Cl. 423-242.000.

Dodson, Gordon O.: *See*—
Garretson, Delmar J., 4,267,802, Cl. 123-523.000.

Doenges, Gerhard: *See*—
Herwig, Thomas; and Doenges, Gerhard, 4,268,752, Cl. 250-353.000.

Doi, Yasuhiko; Iwao, Soichi; and Takagishi, Takaharu, to Minolta Camera Kabushiki Kaisha. Paper feeding device for a copying machine. 4,268,163, Cl. 355-14.0SH.

Dollinger, Friedrich: *See—*
Heller, Arthur; Schaumberger, Alfred; Schuster, Klaus; and Dollinger, Friedrich, 4,268,851, Cl. 358-10.000.

Domitrovic, Josip; and Ulrich, Urban, to BBC Brown, Boveri & Co., Ltd. Electrical machine with an axial-flow fan. 4,268,767, Cl. 310-53.000.

Domkowski, Ronald A., to Honor-Gard System. Security system. 4,267,962, Cl. 232-15.000.

Donaldson Company, Inc.: *See—*
Wagner, Wayne M.; and Winnes, David E., 4,267,899, Cl. 181-272.000.

Donley, Robert P.; and Dawson, Terry. Flasher for vehicle lights. 4,268,713, Cl. 174-52.0PE.

Dorner, John R.; Wiltse, Jon F.; and Hollis, Roger E., to Scott & Fetzer Company, The. Motor for rotary brush. 4,268,769, Cl. 310-67.00R.

Douglas, Ray. Attachment for valve spring depressing tool. 4,267,627, Cl. 29-217.000.

Dow Chemical Company, The: *See—*
Gurgiolo, Arthur E., 4,268,683, Cl. 560-24.000.
Gurgiolo, Arthur E., 4,268,684, Cl. 560-24.000.
Kent, Raymond W., Jr., 4,268,652, Cl. 526-217.000.
Lee, George A., 4,268,674, Cl. 548-125.000.
Schwartz, James E.; and McReynolds, Kent B., 4,268,546, Cl. 427-393.500.

Dow Corning Corporation: *See—*
Homan, Gary R.; and Lee, Chi-Long, 4,268,655, Cl. 528-15.000.
Keil, Joseph W., 4,268,499, Cl. 424-68.000.

Dowty Rotol Limited: *See—*
McCarthy, Roy F. J., 4,268,571, Cl. 428-236.000.

Dravo Corporation: *See—*
Stellfox, Samuel K.; and Urban, Hermann, 4,268,204, Cl. 414-139.000.

Drechsel, Erhart K.: *See—*
Sardisco, John B.; and Drechsel, Erhart K., 4,268,492, Cl. 423-482.000.

Dreher, Ingo: *See—*
Rammler, Roland; Dreher, Ingo; and Rudisch, Rainer, 4,268,359, Cl. 201-31.000.

Dresser Industries, Inc.: *See—*
Dilg, Walter C., 4,267,935, Cl. 213-72.000.
Hughen, James F.; Herring, Jimmy R.; Biedermann, David A.; and Ovens, Christopher W., 4,268,827, Cl. 340-715.000.

Driver, Ervin M.: *See—*
Lynch, Paul C.; and Driver, Ervin M., 4,267,994, Cl. 248-65.000.

Dubois, Jean C.: *See—*
Eranian, Armand; Dubois, Jean C.; Couttet, Andre; and Datamanti, Evelyne, 4,268,590, Cl. 430-5.000.

Duchardt, Karl H.; Groll, Manfred; and Wunderlich, Klaus, to Bayer Aktiengesellschaft. Phthalocyanine reactive dyestuffs. 4,268,267, Cl. 8-549.000.

Ducret, Lucien C. Welded armored cable cutting tool. 4,267,636, Cl. 30-90.300.

Dunagan, Kenneth M., to RKC Corporation. Electroplating from a thiosulfate-containing medium without sulfiding. 4,268,619, Cl. 430-398.000.

Dunlop Limited: *See—*
Dickson, Peter C., 4,267,681, Cl. 52-664.000.
Morris, Ralph F., 4,268,226, Cl. 417-332.000.

Dunn, Michael W.: *See—*
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,268,131, Cl. 351-160.00H.

Du Pont de Nemours, E. I., and Company: *See—*
Anderson, Albert G. 4,268,667, Cl. 542-402.000.
Garnett, Donald I.; and Peterson, Marvin L., 4,268,421, Cl. 252-441.000.
Grantham, Gary D., 4,268,520, Cl. 424-285.000.
Long, George R.; and Smayling, Michael C., 4,268,179, Cl. 400-120.000.

Dupre, Leo H.: *See—*
Perreault, Arthur W.; and Dupre, Leo H., 4,268,217, Cl. 414-740.000.

Duprez, Daniel; and Grand, Michel, to Elf France. Catalytic conversion of aromatic fractions in the presence of steam. 4,268,702, Cl. 585-411.000.

du Quesne, Francis. Device for fixing a wheel to an apparatus for fitting and removing tires. 4,267,867, Cl. 157-17.000.

Duracell International Inc.: *See—*
Bartunek, William; and Mallory, Henry R., 4,268,894, Cl. 362-158.000.

Duriron Company, Inc., The: *See—*
Brun, Bernard T.; and McKinney, John W., Jr., 4,268,371, Cl. 204-196.000.

Duvdevani, Ilan; and Spenadel, Lawrence, to Exxon Research & Engineering Co. Automotive fascia. 4,268,552, Cl. 428-31.000.

Dykzeul, Theodore J., to Robertshaw Controls Company. Protective inlet for gas regulator valve housing. 4,267,859, Cl. 137-550.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Deneke, Klaus; and Lenz, Arnold, 4,268,485, Cl. 423-3.000.
Steffen, Klaus D., 4,268,698, Cl. 570-198.000.

E.G.O. Elektro-Gerate Blanc u. Fischer: *See—*
Gossler, Gerhard, 4,267,815, Cl. 126-39.00G.

E. R. Wagner Manufacturing Company: *See—*
Cottrell, Merlyn F.; Gauthier, Dale J.; and Miller, Lester C., 4,268,742, Cl. 219-532.000.

Earnest, Ernest R., to Hydragon Corporation. Combined gas turbine-rankine turbine power plant. 4,267,692, Cl. 60-39.18R.

Eastman Kodak Company: *See—*
Ettischer, Helmut, 4,268,149, Cl. 354-187.000.
Haase, Jan R.; Landholm, Richard A.; and Krutak, James J., Sr., 4,268,606, Cl. 430-223.000.
Harvey, Frederick W.; Sethi, Gurdip S.; and Sikorski, Stephen L., 4,268,145, Cl. 354-121.000.
Martin, Thomas W.; Sandhu, Mohammad A.; and Savage, Dennis J., 4,267,961, Cl. 250-226.000.

Eaton Corporation: *See—*
Bradshaw, Cyril E., 4,267,855, Cl. 137-85.000.
Kolze, Lawrence A., 4,267,711, Cl. 68-12.00R.
Pipes, George R., 4,268,207, Cl. 414-277.000.
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,268,846, Cl. 357-38.000.

Ebert, Jack E. Marking tape and method. 4,268,566, Cl. 428-195.000.

Ebi, Yutaka; Hirakura, Koji; Matsumoto, Fuyuhiko; Ohta, Wasaburo; and Tomita, Satoru, to Ricoh Company, Ltd. Toner image transfer method and apparatus for electrostatic photography. 4,268,157, Cl. 355-3.0TR.

Ebisawa, Kiyohito; Hisabayashi, Satoshi; Hashimoto, Kazuyuki; Kuromori, Mitsuo; and Koike, Toshio, to Iwatsu Electric Co., Ltd. Electrographic copying apparatus. 4,268,162, Cl. 355-14.00R.

Eckert, Kim, to Motorola, Inc. Zero crossover detector. 4,268,764, Cl. 307-354.000.

Eddelman, Roy T.; and Moran, Gregory F. Volumetric pipettor. 4,267,729, Cl. 73-425.40P.

Eder, Helmut: *See—*
Beckord, Ulrich; and Eder, Helmut, 4,268,768, Cl. 310-62.000.

Edwards, Douglas F., to J. B. Foote Foundry Co., The. Shift control for transmission. 4,267,745, Cl. 74-476.000.

Edwards, John V.: *See—*
Steer, Peter L.; and Edwards, John V., 4,268,286, Cl. 55-278.000.

Effland, Richard C.; Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. Spiro[dihydrobenzofuran-piperidines and-pyrrolidines], pharmaceutical compositions thereof and methods of use thereof. 4,268,515, Cl. 424-267.000.

Eggert, Walter S., Jr., to Budd Company, The. Automotive body frame for a combined engine and battery operated vehicle. 4,267,895, Cl. 180-54.00A.

Eggler, James F.; and Hess, Hans-Jurgen E., to Pfizer Inc. 13,14-Dihydro-15-alkenyl- and 13,14-dihydro-15-alkynyl prostaglandins and analogs thereof. 4,268,522, Cl. 424-305.000.

Eguchi, Seiji: *See—*
Suzuki, Seigo; and Eguchi, Seiji, 4,268,904, Cl. 364-200.000.

Ehrenreich, Leo C.: *See—*
Klingaman, Richard M.; and Ehrenreich, Leo C., 4,268,320, Cl. 106-288.00B.

Eichelberger, Charles W.; Dehn, Rudolph A.; Gdula, Michael; and Wojnarowski, Robert J., to General Electric Company. Circuit for controlling current flow from an A.C. source to a load. 4,268,779, Cl. 315-105.000.

Eickerman, Curtis L., to Motorola, Inc. Muzzle velocity compensating apparatus and method for a remote set fuze. 4,267,776, Cl. 102-215.000.

EKA Aktiebolag: *See—*
Mansson, Inge G., 4,268,350, Cl. 162-29.000.

Eker, Per-Olof: *See—*
Jarl, Stig; Eker, Per-Olof; and Davidsson, Peter, 4,267,741, Cl. 74-339.000.

Electric Power Research Institute: *See—*
Lazarek, Gerald M.; and Staub, Fred W., 4,268,850, Cl. 357-82.000.

Electronized Chemicals Corporation: *See—*
Smuckler, Jack H., 4,268,559, Cl. 428-99.000.

Elf France: *See—*
Duprez, Daniel; and Grand, Michel, 4,268,702, Cl. 585-411.000.

Eli Lilly and Company: *See—*
Martin, Joe O., 4,268,502, Cl. 424-83.000.
Vargas, Ovidio; and Herrold, Anne M., 4,268,526, Cl. 424-358.000.

Ellin, Seymour: *See—*
Coppa, Richard J.; Ellin, Seymour; and Stempeck, John W., 4,268,138, Cl. 354-27.000.

Ellingsen, Odd: *See—*
Korterod, Lars; Strand, Arne; Ellingsen, Odd; and Broen, Harry, 4,267,929, Cl. 206-603.000.

Ellis, Paul B.; and Morris, David L., to Miles Laboratories, Inc. Apoglucose oxidase preparation. 4,268,631, Cl. 435-190.000.

Emerson Electric Co.: *See—*
Kunz, Bernard L.; and Hargraves, David P., 4,268,006, Cl. 251-11.000.

Engelmann, Roger F.; and Thurler, James E., to J. I. Case Company. Control device for three-point hitch. 4,268,057, Cl. 280-474.000.

Engineering Components Limited: *See—*
Barrington, Ross B., 4,268,290, Cl. 55-521.000.

English, Edgar, Jr. Article of manufacture comprising protective packaging for packageable objects of a fragile or perishable nature. 4,267,927, Cl. 206-524.000.

Enoch Skirvin & Sons, Inc.: *See—*
Skirvin, Paul G.; Skirvin, Walter W.; and Skirvin, Carl L., 4,268,051, Cl. 280-145.000.

Enright, Dorothy P.: *See*—
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., 4,268,400, Cl. 252-8.50C.

Entec Products Corporation: *See*—
Ward, Dan S., 4,267,825, Cl. 126-433.000.

Entreprise d'Equipments Mecaniques et Hydraulics: *See*—
Tuson, Samuel, 4,268,191, Cl. 405-195.000.

Environmental Air Control, Inc.: *See*—
Davis, George B.; and Irving, Robert W., 4,267,769, Cl. 98-33.00A.

Eranian, Armand; Dubois, Jean C.; Couttet, Andre; and Datamanti, Evelyne, to Thomson-CSF. Photomasking composition, process for preparing same and mask obtained. 4,268,590, Cl. 430-5.000.

Erard, Francois; and Soussan, Salomon, to Rhone-Poulenc Industries. Two-phase vinyl chloride polymerization. 4,268,651, Cl. 526-65.000.

Erber, Roger A.: *See*—
Crankshaw, Gary K.; and Erber, Roger A., 4,267,925, Cl. 206-221.000.

Erickson, John W., to Kobe, Inc. Method of removing particulate contaminants from a gas stream. 4,268,281, Cl. 55-92.000.

Erickson, Raymond K.: *See*—
Henrion, W. S.; and Erickson, Raymond K., 4,268,814, Cl. 338-32.00H.

Ericsson, Sylve J. D.: *See*—
Scherp, Sven; and Ericsson, Sylve J. D., 4,267,773, Cl. 101-123.000.

Ernst, Horst M.; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, to SKF Kugellagerfabriken GmbH. Clutch release device. 4,267,913, Cl. 192-98.000.

Ernst, Horst M.: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Kunkel, Heinrich; Halliger, Leonard; Stolz, Robert; and Schurger, Rainer, 4,267,920, Cl. 198-842.000.

Erwin, Lewis, II: *See*—
Suh, Nam P.; and Erwin, Lewis, II, 4,268,465, Cl. 264-25.000.

Eschner, Axel; Leupold, Hermann; and Jeschke, Peter, to Didier-Werke AG. Valve element for sliding type valve joints on the outlet of vessels containing molten metal and process for making same. 4,268,016, Cl. 266-236.000.

ESCO Corporation: *See*—
Hahn, Frederick C.; and Jones, Larren F., 4,267,653, Cl. 37-142.00A.

Eshghy, Siavash, to Rockwell International Corporation. Tension control of fasteners. 4,267,629, Cl. 29-407.000.

Eskow, Cary N.: *See*—
Black, Charles H.; and Eskow, Cary N., 4,267,916, Cl. 194-102.000.

Espenschied, Helmut; Kiencke, Uwe; and Schulz, Alfred, to Robert Bosch GmbH. Method and apparatus for adjusting the operating force applied to gears during gear shifts. 4,267,750, Cl. 74-866.000.

Esper, Friedrich J.; and Wiedenmann, Hans-Martin, to Robert Bosch GmbH. Method of making a medical prosthesis. 4,268,468, Cl. 264-131.000.

Esper, Norbert: *See*—
Burba, Christian; Volland, Hans-Gunter; and Esper, Norbert, 4,268,548, Cl. 427-387.000.

Esselte Pendaflex Corp.: *See*—
Hemgren, Sven A., 4,267,949, Cl. 225-106.000.
Solomon, Jack, 4,267,656, Cl. 40-352.000.

Ethicon, Inc.: *See*—
Muxfeldt, Hans; and Dahlke, Hermann, 4,268,495, Cl. 424-1.000.

Ethyl Corporation: *See*—
Kuehnhanss, Gerhard O., 4,268,449, Cl. 260-347.300.

Ets Benac & Fils S.A.: *See*—
Fontrier, Albert D., 4,268,199, Cl. 414-24.500.

Ettischer, Helmut, to Eastman Kodak Company. Latch for collapsible photographic camera. 4,268,149, Cl. 354-187.000.

Eue, Ludwig: *See*—
Sasse, Klaus; Beck, Gunther; Eue, Ludwig; and Schmidt, Robert R., 4,268,681, Cl. 548-337.000.

Evans, David M.; and Rogers, Edward J., to S&C Electric Company. Circuit interrupting device. 4,268,811, Cl. 337-156.000.

Evans, Evan J., to United Wiring & Manufacturing Co. Automated wiring apparatus. 4,268,739, Cl. 219-56.100.

Eventoff, Franklin N.; and Christiansen, M. Tyrone. Multi-function touch switch apparatus. 4,268,815, Cl. 338-69.000.

Everett, William F., to Johnson Controls, Inc. Oil burner control system with flue damper adapter circuit. 4,267,965, Cl. 236-1.00G.

Everts & Van der Weyden Exploitatiemaatschappij Ewem/N.V.: *See*—
Lubbers, Marius H., 4,267,970, Cl. 238-310.000.

Evstafiev, Evgeny A.: *See*—
Ivanov, Jury P.; Evstafiev, Evgeny A.; and Tarasov, Alexandr E., 4,267,789, Cl. 114-65.00R.

Exxon Research & Engineering Co.: *See*—
Cole, Robert N., 4,268,017, Cl. 266-265.000.
Duvdevani, Ilan; and Spenadel, Lawrence, 4,268,552, Cl. 428-31.000.
Langer, Arthur W., Jr.; and Whitney, Thomas A., 4,268,455, Cl. 260-448.00R.
Lewis, Oliver G., 4,267,858, Cl. 137-529.000.
Mohan, Raam R.; Silbernagel, Bernard G.; and Singhal, Gopal H., 4,268,415, Cl. 252-413.000.
Muenker, Adolf H.; and Young, Archie R., II, 4,268,319, Cl. 106-288.00B.
Oswald, Alexis A.; and Murrell, Lawrence L., 4,268,682, Cl. 556-465.000.
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,268,630, Cl. 435-148.000.
Stephens, Richard B., 4,268,347, Cl. 156-628.000.

Eydt, Andre J.: *See*—
Williams, Richard A.; Eydt, Andre J.; Lambert, Charles E.; McGuire, Michael T.; Schulok, Walter W.; and Waitman, Reuben H., 4,268,533, Cl. 426-577.000.

Ezis, Andre, to Ford Motor Company. Method of forming a slip cast article of cellular construction. 4,268,466, Cl. 264-42.000.

Fabricius, Emilio: *See*—
Bauer, Walter; Fabricius, Emilio; Lanzerath, Gunther; Patzer, Helmut; and Vogele, Richard, 4,267,912, Cl. 192-53.00F.

Fabrig, Paul, to Womako Maschinenkonstruktionen GmbH. Apparatus for stacking note books or the like. 4,268,200, Cl. 414-31.000.

Fabriques de Tabac Reunies S.A.: *See*—
Toimil, Ramon, 4,267,926, Cl. 206-268.000.

Fabrowsky, Hans D.: *See*—
Hanchen, Siegfried; and Fabrowsky, Hans D., 4,268,071, Cl. 285-18.000.

Fagerlie, Richard A.: *See*—
Neff, James A.; Fagerlie, Richard A.; and Bowman, Walter J., 4,267,862, Cl. 137-625.640.

Fahey, Dennis M., to PPG Industries, Inc. Elastomeric coating composition for glass fibers and coated glass fibers made from same. 4,268,577, Cl. 428-394.000.

Fahmy, Mohamed A., to Mobil Oil Corporation. 0-Alkyl-s-branched alkyl-alkylphosphonodithioate. 4,268,508, Cl. 424-222.000.

Fairchild Camera and Instrument Corp.: *See*—
Bell, Antony G., 4,268,911, Cl. 365-104.000.

Falardeau, Fidel. Concrete mixer. 4,268,174, Cl. 366-18.000.

Farbenfabriken Bayer Aktiengesellschaft: *See*—
Breuer, Wolfram; and Siemer, Klaus, 4,268,224, Cl. 417-32.000.

Farha, Floyd E., Jr.: *See*—
Box, E. O., Jr.; and Farha, Floyd E., Jr., 4,268,399, Cl. 210-762.000.

Farmitalia Carlo Erba S.p.A.: *See*—
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,268,451, Cl. 260-376.000.

FarmTronics Inc.: *See*—
Bryant, Donald E., 4,267,972, Cl. 239-66.000.

Farrell, Eugene A.; and LaBow, Jean A., to Frink Sno-Plows. Coupler for snowplow. 4,268,058, Cl. 280-481.000.

Farrington, Gregory C.; and Roth, Walter L., to General Electric Company. Solid state, ambient temperature electrochemical cell. 4,268,587, Cl. 429-193.000.

Faulhaber, Friedrich R.: *See*—
Werther, Joachim; Fuchs, Hugo; Brand, Uwe; and Faulhaber, Friedrich R., 4,268,440, Cl. 260-239.30A.

Fearing, Ralph B., to Stauffer Chemical Company. Polyurethanes containing a poly (oxyorganophosphate/phosphonate) flame retardant. 4,268,633, Cl. 521-168.000.

Feder, Joseph: *See*—
Tolbert, William R.; Kuo, Mau-Jung; and Feder, Joseph, 4,268,629, Cl. 435-41.000.

Federal-Mogul Corporation: *See*—
Benson, Donald H.; and Mosher, Larry, 4,267,814, Cl. 125-15.000.

Feldman, Martin L.; and De Groff, James T., to Tenneco Chemicals, Inc. Colorant-thickener dispersions for unsaturated polyester resin compositions. 4,268,431, Cl. 260-40.00R.

Ferguson, Charles O.; and Ferguson, John W., to Ferguson Welding and Spring Fabrication, Inc. Pallet unloader for fork lifts. 4,268,210, Cl. 414-497.000.

Ferguson, John W.: *See*—
Ferguson, Charles O.; and Ferguson, John W., 4,268,210, Cl. 414-497.000.

Ferguson Welding and Spring Fabrication, Inc.: *See*—
Ferguson, Charles O.; and Ferguson, John W., 4,268,210, Cl. 414-497.000.

Fernstrom, Harry G., to Atlas Copco Aktiebolag. Hand held rotary machine tool with vibration insulating means. 4,268,233, Cl. 418-270.000.

Ferry Cap & Set Screw Co., The: *See*—
Warner, John R., 4,267,870, Cl. 411-98.000.

Feucht, Rudi: *See*—
Biermann, Peter; Feucht, Rudi; and Schmidt, Manfred, 4,268,063, Cl. 280-615.000.

Ficken, William H.: *See*—
O'Connor, Bernard J.; Ficken, William H.; Carnevale, Tony R.; and Lanni, Michael J., 4,267,737, Cl. 74-5.470.

Fielder, Andrew J.: *See*—
Banister, Arthur J.; Fielder, Andrew J.; Hauptman, Zdenek V.; and Smith, Nigel R. M., 4,268,491, Cl. 423-406.000.

Fifolt, Michael J.: *See*—
Colson, James G.; Cooke, Victor F. G.; Day, F. Howard; and Fifolt, Michael J., 4,268,457, Cl. 260-544.00P.

Fikentscher, Rolf: *See*—
Kurze, Joachim; Fikentscher, Rolf; and Krusche, Georg, 4,268,402, Cl. 252-8.800.

Finch, Theron R.: *See*—
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,268,597, Cl. 430-102.000.

Fink, Herbert; Suetterlin, Norbert; Dinklage, Horst; and Tilch, Willi, to Rohm GmbH. Synthetic resin powder and coating agents containing the same. 4,268,549, Cl. 427-393.500.

Firestone Tire & Rubber Company, The: *See*—
Gunesin, Binnur; and Halasa, Adel F., 4,268,642, Cl. 525-382.000.

First Citizens Bank & Trust Co., executor: *See*—
Davis, Rachel D., deceased; and First Citizens Bank & Trust Co., executor, 4,268,529, Cl. 426-72.000.

Fischbach and Moore, Inc.: *See*—
DeSmet, Gregory L., 4,268,821, Cl. 340-378.100.
Fischer, Artur. Sliding contact for a toy train. 4,267,906, Cl. 191-49.000.
Fischer, David J.; Wooten, Idella B.; Thomas, John C.; and Reid, James A., to Bausch & Lomb Incorporated. Preferential orientation of contact lenses. 4,268,133, Cl. 351-161.000.
Fischer Gesellschaft m.b.H.: *See*—
Staufer, Adolf, 4,268,059, Cl. 280-604.000.
Fischer, Wolfgang: *See*—
Paschakarnis, Peter; and Fischer, Wolfgang, 4,268,737, Cl. 219-10.49R.
Fisher, Charles B.; and Fisher, Sidney T. Modulation distortion reducer. 4,268,802, Cl. 332-37.00D.
Fisher, Charles B.; and Fisher, Sidney T. Receiving apparatus for messages with in-band signals. 4,268,914, Cl. 370-118.000.
Fisher, Sidney T.: *See*—
Fisher, Charles B.; and Fisher, Sidney T., 4,268,802, Cl. 332-37.00D.
Fisher, Charles B.; and Fisher, Sidney T., 4,268,914, Cl. 370-118.000.
Fisons Limited: *See*—
Harris, John F.; and Magill, Barrie J., 4,268,694, Cl. 568-763.000.
Turner, David M., 4,268,518, Cl. 424-283.000.
Turner, David M., 4,268,519, Cl. 424-283.000.
Fitzgerald, Harry G.; and Patience, Donald, to Colgate-Palmolive Company. Method of forming an absorbent article. 4,268,340, Cl. 156-296.000.
Flanagan, Joseph E.: *See*—
Frankel, Milton B.; and Flanagan, Joseph E., 4,268,450, Cl. 260-349.000.
Flautt, Thomas J., Jr.; Maguire, Edward J., Jr.; and Richardson, David L., to Procter & Gamble Company, The. Microwave energy moderator. 4,268,738, Cl. 219-10.55F.
Fletcher Sutcliffe Wild Limited: *See*—
Smith, John C., 4,268,193, Cl. 405-292.000.
Flint, Bruce K., to Acton Research Corporation. Multi-path monochromator. 4,268,170, Cl. 356-334.000.
Flynn, Richard T.: *See*—
Kindell, Jerry L.; and Flynn, Richard T., 4,268,909, Cl. 364-200.000.
Porter, Marion G.; Norman, Robert W., Jr.; and Flynn, Richard T., 4,268,907, Cl. 364-200.000.
FMC Corporation: *See*—
Knabke, James J., 4,268,521, Cl. 424-298.000.
Focke & Co.: *See*—
Focke, Heinz; and Liedtke, Kurt, 4,267,958, Cl. 229-44.0CB.
Focke, Heinz; and Liedtke, Kurt, to Focke & Co. Hinge-lid cigarette pack. 4,267,958, Cl. 229-44.0CB.
Folser, Karl: *See*—
Theurer, Josef; and Folser, Karl, 4,267,777, Cl. 104-7.00R.
Fontaine, Paul E. Cue ball aiming device. 4,268,033, Cl. 273-2.000.
Fontrier, Albert D., to Ets Benac & Fils S.A. Trailer for the automatic loading and unloading of round bales. 4,268,199, Cl. 414-24.500.
Force Control Industries, Inc.: *See*—
Cory, Halsey W., 4,267,911, Cl. 192-18.00A.
Ford Aerospace & Communications Corporation: *See*—
Cribbs, Robert W.; Lamb, Billy L.; and DeLacy, Thomas J., 4,268,828, Cl. 343-5.00W.
Ford, John R., Jr.; and Leipold, Harold D., to AMF Incorporated. Current sensing circuit. 4,268,884, Cl. 361-22.000.
Ford Motor Company: *See*—
Aula, Howard A.; and Mauch, Jerry L., 4,267,812, Cl. 123-570.000.
Ezis, Andre, 4,268,466, Cl. 264-42.000.
Ford, Peter W., to Itek Corporation. Facet angle corrector for multi-faceted optical scanner. 4,268,110, Cl. 350-6.700.
Forest Fuels, Inc.: *See*—
Caughey, Robert A., 4,268,274, Cl. 48-111.000.
Forkum, Maston, Jr. Spark plug with ground electrode having diverging prongs. 4,268,774, Cl. 313-141.000.
Formanek, Frank J.; and Schukei, Glen E., to Combustion Engineering, Inc. Positive lock holddown device. 4,268,357, Cl. 176-78.000.
Formato, Richard A., to Formato, Richard A.; and Zoli, Theodore P., Jr. Discharge device ignition system. 4,267,803, Cl. 123-146.50A.
Forssell, Bror I., to RP Rorprodukter AB. Sealing member for use in well shafts. 4,268,043, Cl. 277-34.000.
Forster, Rolf, to Bernhard Forster GmbH. Orthodontic bracket and method of retaining a wire therein. 4,268,249, Cl. 433-10.000.
Fosdick, Dale P.: *See*—
Rosaen, Borje O.; and Fosdick, Dale P., 4,268,384, Cl. 210-133.000.
Foster, Arthur M.: *See*—
Tang, David Y.; and Foster, Arthur M., 4,268,687, Cl. 560-105.000.
Foster, Michael S., to Chevron Research Company. Cracking catalyst rejuvenation. 4,268,376, Cl. 208-120.000.
Foster, Richard G.: *See*—
Allan, John J.; Foster, Richard G.; and Leversidge, Paul L., 4,268,410, Cl. 252-312.000.
Fourcadier, Chantal: *See*—
Grollier, Jean F.; Bugaut, Andree; Andrillon, Patrick; and Fourcadier, Chantal, 4,268,264, Cl. 8-410.000.
Fowler, Neal G.; and Hedrick, Charles L. Building panel. 4,267,682, Cl. 52-657.000.
Fowler, Vernon J.: *See*—
Olberg, Stirling M.; Fowler, Vernon J.; and Anderson, Bruce, 4,268,720, Cl. 179-1.50R.
Foxboro Company, The: *See*—
Olsen, Everett O., 4,268,822, Cl. 340-533.000.
Francis, Phillip W.: *See*—
Barnard, William R.; and Francis, Phillip W., 4,268,173, Cl. 356-445.000.
Frankel, Milton B.; and Flanagan, Joseph E., to Rockwell International Corporation. Energetic hydroxy-terminated azido polymer. 4,268,450, Cl. 260-349.000.
Frantz, Robert H., to AMP Incorporated. Cable slitter. 4,267,757, Cl. 83-464.000.
Franz, Gerhard; Nierlich, Franz; and Ratajczak, Hans-Josef, to Chemische Werke Huls Aktiengesellschaft. Process for the production of maleic anhydride. 4,268,448, Cl. 260-346.750.
Franz, Michel R.: *See*—
Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Folser, Karl, 4,267,777, Cl. 104-7.00R.
Fraser, Alexander R. Nail matrix trephine. 4,267,841, Cl. 128-305.000.
Fraser, Peter E.: *See*—
Killian, Daniel L.; and Fraser, Peter E., 4,268,044, Cl. 277-59.000.
Fratzke, Lawrence F.: *See*—
Myers, Jimmy D.; and Fratzke, Lawrence F., 4,267,890, Cl. 169-75.000.
Fredrick, Edmund R.: *See*—
Hales, Harvey E.; and Fredrick, Edmund R., 4,267,969, Cl. 238-8.000.
Freitag, Dieter; Beer, Wolfgang; and Senge, Ferdinand, to Bayer Aktiengesellschaft. Resol resins prepared using butanol and tri-alkali metal phosphate. 4,268,648, Cl. 525-485.000.
Freze, Benjamin H., to Challenge-Cook Bros., Incorporated. Method for drying fabrics. 4,268,247, Cl. 432-21.000.
Frink Sno-Plows: *See*—
Farrell, Eugene A.; and LaBow, Jean A., 4,268,058, Cl. 280-481.000.
Fritzlen, Jack D.; Thul, Fred M.; and Vogel, Douglas R., to CMI Incorporated. Infrared breath analyzer. 4,268,751, Cl. 250-343.000.
Friz, Walter, to Hay, Louis E., a part interest. Traveling wave device with unific slow wave structure having segmented dielectric support. 4,268,778, Cl. 315-3.500.
Fuchigami, Mitsuru: *See*—
Tsukahara, Hirokazu; Fuchigami, Mitsuru; and Kagota, Nobuhiro, 4,268,634, Cl. 525-471.000.
Fuchs, Hartwig: *See*—
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Fuchs, Werner: *See*—
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Fuji Kiko Kabushiki Kaisha: *See*—
Matsuoka, Hideoki; and Yamamoto, Yoshimi, 4,268,816, Cl. 340-52.00E.
Fuji Oil Company, Ltd.: *See*—
Matsuo, Takaharu; Sawamura, Norio, both of Osaka; Hashimoto, Yukio; and Hashida, Wataru, 4,268,527, Cl. 426-33.000.
Fuji Photo Film Co., Ltd.: *See*—
Adachi, Keiichi; Kato, Eiichi; Inoue, Nobuaki; and Kojima, Tetsurou, 4,268,622, Cl. 430-513.000.
Fujii, Shinichi; and Hata, Hiroshi, 4,268,280, Cl. 55-54.000.
Fujita, Shinsaku; Harada, Tooru; and Yoshida, Yoshinobu, 4,268,624, Cl. 430-562.000.
Fujita, Shinsaku; Hayashi, Hidetoshi; Ono, Shigetoshi; Yoshida, Yoshinobu; and Harada, Tooru, 4,268,625, Cl. 430-562.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,268,605, Cl. 430-216.000.
Hashimura, Taiji, 4,268,618, Cl. 430-393.000.
Ikeda, Tomoaki; Yoshida, Satoshi; Takeuchi, Hideaki; Shinozaki, Fumiaki; and Kido, Keishiro, 4,268,541, Cl. 427-177.000.
Mitsui, Akio; and Suzuki, Yoshiaki, 4,268,617, Cl. 430-373.000.
Namiki, Tomizo; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,268,601, Cl. 430-159.000.
Ogawa, Junkichi; and Hamanka, Tsutomu, 4,268,616, Cl. 430-364.000.
Okishi, Yoshio; Ohashi, Azusa; and Watanabe, Masaru, 4,268,611, Cl. 430-302.000.
Okishi, Yoshio, 4,268,613, Cl. 430-309.000.
Sera, Hidefumi; Hori, Kiyotaka; and Sugimoto, Naohiko, 4,268,623, Cl. 430-529.000.
Sera, Hidefumi; Kitatani, Katuzi; Ogawa, Masasi; Ishigaki, Kunio; and Shiraishi, Hisashi, 4,268,627, Cl. 430-623.000.
Shiba, Keisuke; Toyama, Tadao; and Nakao, Sho, 4,268,609, Cl. 430-271.000.
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Yoshida, Takashi; and Sakaguchi, Shinji, 4,268,604, Cl. 430-215.000.
Fujieda, Yasuhiko: *See*—
Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Hara, Shozo; Tanaka, Toshikazu; and Taira, Akira, 4,268,219, Cl. 414-786.000.
Fujii, Akira: *See*—
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Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; and Sato, Yasushi, to Canon Kabushiki Kaisha. Image recording method and apparatus therefor. 4,268,841, Cl. 346-138.000.

Fujii, Shinichi; and Hata, Hiroshi, to Fuji Photo Film Co., Ltd. Method of continuously degassing water. 4,268,280, Cl. 55-54.000.

Fujii, Tomoo: *See*—
Nakayama, Shozo; Kato, Kimio; and Fujii, Tomoo, 4,268,225, Cl. 417-269.000.

Fujimoto, Tamotsu: *See*—
Kondo, Kiyosi; Fujimoto, Tamotsu; Suda, Minoru; and Tunemoto, Daici, 4,268,442, Cl. 260-326.200.

Fujioka, Katsuhiko: *See*—
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Fujioka, Yoshiki: *See*—
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Kawada, Shigeki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Ohta, Naoto, 4,268,782, Cl. 318-434.000.

Fujisawa, Hideya: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Imanaka, Hiroshi; and Nishida, Minoru, 4,268,503, Cl. 424-114.000.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,268,509, Cl. 424-246.000.

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Fukuda, Kazumasa, to TDK Electronics Co., Ltd. Magnetic erasing head. 4,268,882, Cl. 360-118.000.

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Horie, Toshio; Tomioka, Shouji; and Mine, Nobuyoshi, 4,268,397, Cl. 210-746.000.

Futamase, Tsuyoshi; and Chibana, Masanobu, to Nippon Gakki Seizo Kabushiki Kaisha. Function generators of time-dependent variable type. 4,267,763, Cl. 84-1.220.

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Nielson, Donald L.; Fylstra, David J.; and Stehle, Roy H., 4,268,721, Cl. 179-2.00C.

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Dawson, Harry, 4,268,244, Cl. 431-170.000.

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Gaillard, Jean: *See*—
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,268,701, Cl. 585-329.000.

Gaizauskas, Bronius, to Akzona Incorporated. Plug and receptacle interlock. 4,268,729, Cl. 200-50.00B.

Gallant, Thomas E.: *See*—
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Lind, Keith D.; and Galloway, Deane E., 4,267,960, Cl. 229-55.000.

Galt, Ronald H. B.; and Pearce, Robert J., to Imperial Chemical Industries Limited. 1'-Substituted xanthene-9-spiro-4'-piperidine derivatives and analgesic compositions thereof. 4,268,514, Cl. 424-267.000.

Ganaway, Franklin D., to Phillips Petroleum Company. Control method and apparatus with reset windup prevention. 4,268,784, Cl. 318-610.000.

Gandy, Prem: *See*—
Kloke, Werner, 4,267,657, Cl. 40-549.000.

Gardikes, John J., to Ashland Oil, Inc. Phenolic resin-polyisocyanate binder systems containing a drying oil and use thereof. 4,268,425, Cl. 260-19.00A.

Garfinkel, Marvin: *See*—
Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., 4,268,843, Cl. 357-19.000.

Garlock Inc.: *See*—
Bainard, Dean R.; and Benjamin, Martin E., 4,268,040, Cl. 277-1.000.

Garnett, Donald I.; and Peterson, Marvin L., to Du Pont de Nemours, E. I., and Company. Preparation of furan compounds. 4,268,421, Cl. 252-441.000.

Garnett, John L.: *See*—
Rock, John D.; and Garnett, John L., 4,268,580, Cl. 428-423.400.

Garretson, Delmar J., to Dodson, Gordon O. Fuel vaporization and delivery system. 4,267,802, Cl. 123-523.000.

Garrett Corporation, The: *See*—
Berg, Paul H., 4,268,229, Cl. 417-407.000.

Gary, Fred J. Heat recovery device for use in return air duct of forced air furnace for recovering heat from the flue of such furnace. 4,267,884, Cl. 165-179.000.

Garzon, Ruben D., to Gould Inc. Liquid SF_6 puffer type circuit interrupter. 4,268,733, Cl. 200-150.00G.

Gates, Dennis E.: *See*—
Thompson, James D.; and Gates, Dennis E., 4,268,561, Cl. 428-111.000.

Gatin, Leonard W. Self-releasing hose clamp. 4,268,004, Cl. 251-5.000.

Gauthier, Dale J.: *See*—
Cottrell, Merlyn F.; Gauthier, Dale J.; and Miller, Lester C., 4,268,742, Cl. 219-532.000.

Gavenonis, Thomas L.: *See*—
Hall, Harold H., Jr.; Bouchard, Andre C.; Shaffer, John W.; and Gavenonis, Thomas L., 4,267,774, Cl. 102-201.000.

Gavin, Edward, to Davy International (Minerals & Metals) Ltd. Apparatus for effecting liquid-liquid contact in a plurality of stages. 4,268,484, Cl. 422-259.000.

Gdula, Michael: *See*—
Eichelberger, Charles W.; Dehn, Rudolph A.; Gdula, Michael; and Wojnarowski, Robert J., 4,268,779, Cl. 315-105.000.

Gedeon, Harvey; Joyce, James F.; and Kellner, David, to Revlon, Inc. Clear cosmetic sticks. 4,268,498, Cl. 424-59.000.

General Binding Corporation: *See*—
Semchuck, Mario E., 4,268,345, Cl. 156-499.000.

General Electric Company: *See*—
Bovenkerk, Harold P., 4,268,276, Cl. 51-295.000.
Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., 4,268,843, Cl. 357-19.000.
Eichelberger, Charles W.; Dehn, Rudolph A.; Gdula, Michael; and Wojnarowski, Robert J., 4,268,779, Cl. 315-105.000.
Farrington, Gregory C.; and Roth, Walter L., 4,268,587, Cl. 429-193.000.
Hale, Thomas E., 4,268,569, Cl. 428-215.000.
Hale, Thomas E.; and Lueth, Roy C., 4,268,582, Cl. 428-446.000.
Hanneman, Rodney E.; Urquhart, Andrew W.; and Vermilyea, David A., 4,268,586, Cl. 428-661.000.
Henry, Ralph A., 4,268,834, Cl. 343-858.000.
Herrick, Carlyle S.; and Holub, Fred F., 4,267,879, Cl. 165-1.000.
Herrick, Carlyle S.; and Zarnoch, Kenneth P., 4,268,405, Cl. 252-70.000.
Karikas, John J., 4,267,943, Cl. 222-1.000.
Keeley, Donald E., 4,268,647, Cl. 525-474.000.
Mark, Victor, 4,268,658, Cl. 528-199.000.
Park, Dong-Sil; and Navias, Louis, 4,268,313, Cl. 106-54.000.
Urban, Raymond C., 4,268,339, Cl. 156-272.000.
Webb, Jimmy L.; and Williams, Joseph B., 4,268,429, Cl. 260-37.0PC.

General Foods Corporation: *See*—
Williams, Richard A.; Eydt, Andre J.; Lambert, Charles E.; McGuire, Michael T.; Schulok, Walter W.; and Waitman, Reuben H., 4,268,533, Cl. 426-577.000.

General Motors Corporation: *See*—
Malott, Richard C., 4,268,220, Cl. 415-104.000.

General Tire & Rubber Company, The: *See*—
Allaman, Michael C.; Bailey, Leo T.; and Hudgins, Richard E., 4,267,754, Cl. 83-187.000.

Gesswein, Eberhard; and Moller, Werner. Method of manufacturing a fluorescent screen. 4,268,594, Cl. 430-24.000.

Gheorghiu, Nicolae; and Guzun, Basarab D., to Institutul de Cercetari si Modernizari Energetice. Arc quenching chamber for high breaking capacity circuit breakers. 4,268,732, Cl. 200-148.00R.

Ghiringelli, Giovanni; and Murari, Bruno, to SGS-ATES Componenti Elettronici S.p.A. Protective system for power stage of IC amplifier. 4,268,887, Cl. 361-93.000.

Giacone, Felice: *See*—
Becchi, Raffaele; Giacone, Felice; and Accattino, Andrea, 4,268,747, Cl. 250-231.0SE.

Giardino, David A.: *See—*
Wallace, William K.; Giardino, David A.; and van Nederynen, Gerrit, 4,267,747, Cl. 74-526.000.

Gibson, Thomas W., to Procter & Gamble Company, The. Synthesis of long-chain alkanes having terminal functionality. 4,268,697, Cl. 568-911.000.

Gilbert, Barrie, to Analog Devices, Incorporated. Signal-processing circuitry with intrinsic temperature insensitivity. 4,268,759, Cl. 307-490.000.

Gilbert, Earl F., to Westvaco Corporation. Hinged paperboard container. 4,267,959, Cl. 229-52.00B.

Gilbert, Everett E.: *See—*
Sollott, Gilbert P.; Gilbert, Everett E.; and Warman, Maurice, 4,268,696, Cl. 568-931.000.

Gillette Company, The: *See—*
Plaisted, Richard E., 4,267,851, Cl. 132-33.00R.

Gillis, Clifford J.; and Ramage, Alfred B. Aural representation of events. 4,268,255, Cl. 434-128.000.

Ginger, Edward A., to UOP Inc. Process for the catalytic reduction of nitrogen oxides in gaseous mixtures. 4,268,488, Cl. 423-239.00A.

Gipelec: *See—*
Lecerf, Andre; and Broussely, Michel, 4,268,588, Cl. 429-194.000.

GLJ Toy Co., Inc.: *See—*
Richards, Lawrence, 4,268,030, Cl. 272-77.000.

Glopak Industries Limited: *See—*
Jones, Elwyn D., 4,268,344, Cl. 156-383.000.

GMSG, Inc.: *See—*
MacDonald, Gene W., 4,268,034, Cl. 273-63.00C.

Goff, James R.: *See—*
Spence, Adam M.; and Goff, James R., 4,268,089, Cl. 299-87.000.

Goldman, Patricia J.: *See—*
Beckenbaugh, William M.; Goldman, Patricia J.; and Polakowski, Ted D., Jr., 4,268,536, Cl. 427-54.100.

Good, William C. Apparatus and method for supporting and positioning pipe during the construction of drain fields and the like. 4,268,189, Cl. 405-154.000.

Goodman, Lawrence A., to RCA Corporation. Method for manufacturing a self-aligned contact in a grooved semiconductor surface. 4,268,537, Cl. 427-88.000.

Goodrich, George E.: *See—*
Cain, Earl S.; Carlson, Jerome A.; and Goodrich, George E., 4,268,096, Cl. 308-15.000.

Goodyear Tire & Rubber Company, The: *See—*
Kell, Ralph W., 4,267,921, Cl. 198-847.000.

Gordy International, Inc.: *See—*
Gordy, Peter, 4,267,662, Cl. 46-25.000.

Gordy, Peter, to Gordy International, Inc. Inflatable mating building blocks. 4,267,662, Cl. 46-25.000.

Gorner, Julius K., to BFG Glassgroup. Method of prestressing at least one bent sheet of a sandwich type safety glass. 4,268,297, Cl. 65-104.000.

Gossler, Gerhard, to E.G.O. Elektro-Gerate Blanc u. Fischer. Thermal cut-out for gas-heated glass ceramic cooking surfaces. 4,267,815, Cl. 126-39.00G.

Goto, Jiro: *See—*
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,268,509, Cl. 424-246.000.

Goto, Takeshi; Tanaka, Akio; and Suzuki, Yasuo, to Kawasaki Jukogyo Kabushiki Kaisha; and Nissin Electric Co., Ltd. Apparatus for wire explosion spray coating. 4,267,975, Cl. 239-83.000.

Gouin, William M.: *See—*
Gray, Bruce; Harris, James M.; and Gouin, William M., 4,268,849, Cl. 357-71.000.

Gould, Gordon: *See—*
Schmadel, Donald; Culver, William H.; and Gould, Gordon, 4,268,116, Cl. 350-96.290.

Gould Inc.: *See—*
Garzon, Ruben D., 4,268,733, Cl. 200-150.00G.

Goust, Jean-Michel C.: *See—*
Higerd, Thomas B.; and Goust, Jean-Michel C., 4,268,434, Cl. 260-112.00R.

Grabbe, Dimitry G., to AMP Incorporated. Low impedance electrical connecting means for spaced-apart conductors. 4,268,102, Cl. 339-75.00M.

Graham Magnetics Incorporated: *See—*
Deffeyes, Robert J.; and Tyler, Wesley R., 4,268,302, Cl. 75-0.5AA.

Graham, Tommy E.: *See—*
Dobo, Emerick J.; and Graham, Tommy E., 4,268,278, Cl. 55-16.000.

Gralton, Gary W., to Combustion Engineering, Inc. Heat exchanger for cooling a high pressure gas. 4,267,882, Cl. 165-83.000.

Grand, Michel: *See—*
Duprez, Daniel; and Grand, Michel, 4,268,702, Cl. 585-411.000.

Granig, Hubert. Device for discharging pressure gas reservoirs. 4,268,065, Cl. 280-737.000.

Grant, Frederic F.; and Martija, Henry M., to Bell & Howell Company. Tape guiding method and apparatus. 4,267,951, Cl. 226-195.000.

Grantham, Gary D., to Du Pont de Nemours, E. I., and Company. Insecticidal and nematicidal carbamates. 4,268,520, Cl. 424-285.000.

Gras, Rainer. Process for the coating of glass surfaces. 4,268,554, Cl. 428-35.000.

Grassmann, Hans-Christian, to Siemens Aktiengesellschaft. Arrangement for suppressing high frequency currents in bearings of shafts. 4,268,758, Cl. 307-105.000.

Grasso, Roy. Sinker releasing apparatus. 4,267,659, Cl. 43-43.120.

Gray, Bruce; Harris, James M.; and Gouin, William M., to National Semiconductor Corporation. Raised bonding pad. 4,268,849, Cl. 357-71.000.

Gray, Thomas A.: *See—*
Murakami, Eugene T.; and Gray, Thomas A., 4,268,753, Cl. 250-357.000.

Green, Alfred E. A.: *See—*
Watts, Arthur E.; and Green, Alfred E. A., 4,267,612, Cl. 6-4.00B.

Green, George R. J., to CBS Inc. Image enhancement system for television. 4,268,864, Cl. 358-166.000.

Green, John R.; and Turner, Charles D. Foldable binoculars. 4,268,111, Cl. 350-70.000.

Green, Robert R. Asphaltic material and method. 4,268,428, Cl. 260-28.5AS.

Greenberg, Arthur: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,268,597, Cl. 430-102.000.

Greene, Jerome. Radial and thrust-type hydrodynamic bearing capable of accommodating misalignment. 4,268,094, Cl. 308-9.000.

Greenleaf Corporation: *See—*
Peters, Robert W., 4,268,198, Cl. 408-186.000.

Grey, Roger A.: *See—*
Pez, Guido P.; and Grey, Roger A., 4,268,454, Cl. 260-439.00R.

Griehl, Wolfgang: *See—*
Schmid, Eduard; and Griehl, Wolfgang, 4,268,661, Cl. 528-338.000.

Griffin, Gerald J. L.; and Brewer, Malcolm D., to Beecham Group Limited. Sustained drug release device. 4,268,497, Cl. 424-27.000.

Grob, Russel W., to Caterpillar Tractor Co. Method of and apparatus for multiplying pulses. 4,268,792, Cl. 328-24.000.

Groen Division - Dover Corporation: *See—*
Minifie, Bernard W.; and Czyzewski, Ted S., 4,267,703, Cl. 62-123.000.

Groll, Manfred: *See—*
Duchardt, Karl H.; Groll, Manfred; and Wunderlich, Klaus, 4,268,267, Cl. 8-549.000.

Grollier, Jean F.; Bugaut, Andree; Andrillon, Patrick; and Fourcadier, Chantal, to L'Oreal. Composition for hair dyeing which contains a para base and an ortho base. 4,268,264, Cl. 8-410.000.

Gross, Michael J.; and Turner, Christopher H. Dowel post for dental and medical prosthetic devices. 4,268,253, Cl. 433-221.000.

Groves, Ian S.; Guard, David R.; and Whalley, Steven, to Post Office, The. Audio teleconferencing. 4,268,716, Cl. 179-1.0CN.

Gruber, Heinz, to Kusters, Eduard. Pattern-creating device for advancing textile or similar webs. 4,267,712, Cl. 68-205.00R.

Grumman Energy Systems, Inc.: *See—*
Diamond, Edward H., 4,267,822, Cl. 126-417.000.

Grundy & Partners Limited: *See—*
Scott, Harold A.; and Martin, David J., 4,268,826, Cl. 340-707.000.

Grunewald, Lynn O.; and Hipp, Steven J., to Rite Hite Corporation. Releasable lock mechanism. 4,267,748, Cl. 74-529.000.

GTE Laboratories Incorporated: *See—*
Olberg, Stirling M.; Fowler, Vernon J.; and Anderson, Bruce, 4,268,720, Cl. 179-1.50R.

GTE Products Corporation: *See—*
Brower, Boyd G.; Sindlinger, Ronald E.; and Holmes, James L., 4,268,891, Cl. 362-11.000.
Hall, Harold H., Jr.; Bouchard, Andre C.; Shaffer, John W.; and Gavenonis, Thomas L., 4,267,774, Cl. 102-201.000.
Roche, William J.; and Sadoski, Tadius T., 4,268,780, Cl. 315-179.000.

Guard, David R.: *See—*
Groves, Ian S.; Guard, David R.; and Whalley, Steven, 4,268,716, Cl. 179-1.0CN.

Gugel, Georg, to Industriewerke Schaeffler OHG. Assembly method for large diameter rolling bearings. 4,267,625, Cl. 29-148.40A.

Gulati, Suresh T.; Smith, Norman A.; and Spycher, Anton A., to Corning Glass Works. Lightweight laminated photochromic lenses. 4,268,134, Cl. 351-163.000.

Gunesin, Binnur; and Halasa, Adel F., to Firestone Tire & Rubber Company, The. Butadiene-styrene-vinyl benzyl chloride terpolymers. 4,268,642, Cl. 525-382.000.

Gurev, Harold S., to Optical Coating Laboratory, Inc. Method and apparatus for forming films from vapors using a contained plasma source. 4,268,711, Cl. 136-256.000.

Gurgiolo, Arthur E., to Dow Chemical Company, The. Preparation of carbamates from aromatic amines and organic carbonates. 4,268,683, Cl. 560-24.000.

Gurgiolo, Arthur E., to Dow Chemical Company, The. Preparation of carbamates from aromatic amines and organic carbonates. 4,268,684, Cl. 560-24.000.

Guth, Jack E. Photo-tide level recorder. 4,268,839, Cl. 346-107.00R.

Guzun, Basarab D.: *See—*
Gheorghiu, Nicolae; and Guzun, Basarab D., 4,268,732, Cl. 200-148.00R.

Haase, Jan R.; Landholm, Richard A.; and Krutak, James J., Sr., to Eastman Kodak Company. Azo dye compounds and photographic materials. 4,268,606, Cl. 430-223.000.

Habu, Takeshi: *See—*
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,268,620, Cl. 430-403.000.

Hacke, Hans-Juergen; and Hadersbeck, Hans, to Siemens Aktiengesellschaft. Process for the production of printed circuits with solder rejecting sub-zones. 4,268,349, Cl. 156-656.000.

Hadersbeck, Hans: *See*—
Hacke, Hans-Juergen; and Hadersbeck, Hans, 4,268,349, Cl. 156-656.000.
Haese, Egon, to Dr. C. Otto & Comp. GmbH; and Sidmar N.V. Process for the removal of sulfur dioxide from gases. 4,268,489, Cl. 423-242.000.
Hagen, Alexander: *See*—
Klose, Sigmar; Batz, Hans-Georg; Stoltz, Michael; Hagen, Alexander; and Weimann, Gunter, 4,268,628, Cl. 435-22.000.
Hagwell, Edward R. Telephone question and answer training device. 4,267,646, Cl. 434-111.000.
Hahn, Frederick C.; and Jones, Larren F., to ESCO Corporation. Locking device for excavating equipment. 4,267,653, Cl. 37-142.00A.
Haker, Rolf: *See*—
Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, 4,268,367, Cl. 204-149.000.
Hakkinen, Taisto. Expiration valve apparatus for use with a respirator or like apparatus. 4,267,832, Cl. 128-205.240.
Halasa, Adel F.: *See*—
Gunesin, Binnur; and Halasa, Adel F., 4,268,642, Cl. 525-382.000.
Hale, Thomas E., to General Electric Company. Coating underlayers. 4,268,569, Cl. 428-215.000.
Hale, Thomas E.; and Lueth, Roy C., to General Electric Company. Boride coated cemented carbide. 4,268,582, Cl. 428-446.000.
Hales, Harvey E.; and Fredrick, Edmund R., to Railroad Concrete Crosstie Corporation. Railroad grade crossing construction. 4,267,969, Cl. 238-8.000.
Hall, Dale E., to Inco Research & Development Center Inc. Nickel-zinc alloy deposition from a sulfamate bath. 4,268,364, Cl. 204-43.00Z.
Hall Decker McKibbin & Singer, Inc.: *See*—
Hall, John E., 4,268,387, Cl. 210-169.000.
Hall, Harold H., Jr.; Bouchard, Andre C.; Shaffer, John W.; and Gavenonis, Thomas L., to GTE Products Corporation. Heat-sealed pyrotechnic cap. 4,267,774, Cl. 102-201.000.
Hall, John E., to Hall, John E.; and Hall Decker McKibbin & Singer, Inc., part interest to each. Filtration system. 4,268,387, Cl. 210-169.000.
Hall, Norman; Martin, Alexander; and Tomlinson, Alan D., to Lever Brothers Company. Detergent bars containing di-, hydroxy and/or amino-carboxylic acid moisturizers. 4,268,424, Cl. 252-546.000.
Halliger, Leonard: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Kunkel, Heinrich; Halliger, Leonard; Stolz, Robert; and Schurger, Rainer, 4,267,920, Cl. 198-842.000.
Hamanka, Tsutomu: *See*—
Ogawa, Junkichi; and Hamanka, Tsutomu, 4,268,616, Cl. 430-364.000.
Hamburger Stahlwerke GmbH: *See*—
Luhrsen, Ernst; Sussmuth, Godehard; and Walden, Klaus, 4,268,015, Cl. 266-236.000.
Hampl, Edward F., Jr., to Minnesota Mining and Manufacturing Company. Hot-junction electrode members for copper/silver chalocogenides. 4,268,710, Cl. 136-205.000.
Hanamura, Shoji: *See*—
Koike, Norio; Hanamura, Shoji; and Kubo, Masaharu, 4,268,845, Cl. 357-30.000.
Hanchen, Siegfried; and Fabrowsky, Hans D., to Herbert Hanchen KG. Device for coupling pipeline flanges. 4,268,071, Cl. 285-18.000.
Handte, Herbert; and Kollmar, Friedrich, to Moog GmbH. Self-adjusting ramp generator. 4,268,794, Cl. 328-185.000.
Hanke, Reinhard; and Jahn, Kornel, to Voest-Alpine Aktiengesellschaft. Sieve and sieving apparatus for separating solids from a suspension. 4,268,382, Cl. 209-273.000.
Hankins, Ronald G.; and Butcher, Jimmie J., to CMI Corporation. Portable self-erecting silo apparatus. 4,268,208, Cl. 414-332.000.
Hanneman, Rodney E.; Urquhart, Andrew W.; and Vermilyea, David A., to General Electric Company. Corrosion resistant zirconium alloy structural components and process. 4,268,586, Cl. 428-661.000.
Hanon, Etienne T.: *See*—
Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.
Hansen, Rainer: *See*—
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,267,718, Cl. 72-59.000.
Hansen, Randall C.: *See*—
Bohleen, Brian O.; and Hansen, Randall C., 4,268,077, Cl. 292-336.300.
Hanson, Stephen P., to Marvin Glass & Associates. Multiple vehicle launcher. 4,267,661, Cl. 46-1.00K.
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, to Janome Sewing Machine Co. Ltd. Lock stitching and overlock stitching sewing machine. 4,267,786, Cl. 112-168.000.
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Stabilization of organic substrate materials including photographic dye images against the action of light. 4,268,605, Cl. 430-216.000.
Hara, Kazumasa: *See*—
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,267,786, Cl. 112-168.000.
Hara, Shozo: *See*—
Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Hara, Shozo; Tanaka, Toshikazu; and Taira, Akira, 4,268,219, Cl. 414-786.000.
Harada, Mikio: *See*—
Yamamoto, Katsuji; Iwasaki, Yuichiro; Adachi, Akira; Kawata, Toshiro; Nagano, Keisuke; Fujita, Seiichi; and Harada, Mikio, 4,268,295, Cl. 65-19.000.
Harada, Tooru: *See*—
Fujita, Shinsaku; Harada, Tooru; and Yoshida, Yoshinobu, 4,268,624, Cl. 430-562.000.
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Harbert, Charles A.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,268,523, Cl. 424-308.000.
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,268,692, Cl. 568-326.000.
Hardesty, Edwin C., to Western Electric Company, Inc. Coupler for telephone cords. 4,268,109, Cl. 339-205.000.
Hareyama, Kyuichi, to Nippon Electric Co., Ltd. Integrating type analog-to-digital converter. 4,268,820, Cl. 340-347.0NT.
Hargraves, David P.: *See*—
Kunz, Bernard L.; and Hargraves, David P., 4,268,006, Cl. 251-11.000.
Haried, John C. Process and apparatus for conserving energy in laundry equipment. 4,267,643, Cl. 34-48.000.
Harle & Lechopiez: *See*—
Montigny, Jean, 4,268,528, Cl. 426-40.000.
Harmony, Richard C. Insulator for canned drinks. 4,268,567, Cl. 428-195.000.
Harnisch, Horst; and Rasche, Peter, to Bayer Aktiengesellschaft. Acid monomethine-metal complex dyestuffs. 4,268,668, Cl. 8-685.000.
Harper, Philip M., Sr., to United States of America, National Aeronautics and Space Administration. Tire/wheel concept. 4,267,992, Cl. 244-103.00R.
Harrigan, Roy M. Illumination apparatus for use in an obscured ambient, fluid conduit and method. 4,268,893, Cl. 362-96.000.
Harrington, John G.; and Hornbeck, William W. Composition and method for the treatment of animal hooves. 4,268,504, Cl. 424-143.000.
Harrington, Shelby A., to A-T-O Inc. Coupling mechanism for capping machine chuck. 4,267,683, Cl. 53-331.500.
Harris Corporation: *See*—
Clark, Hamilton, Jr., 4,268,718, Cl. 179-1.00E.
Harris, George M.; and Thomas, Samuel J., to Kendall Company, The. Pipe wrapping adhesive tape method. 4,268,334, Cl. 156-187.000.
Harris, James M.: *See*—
Gray, Bruce; Harris, James M.; and Gouin, William M., 4,268,849, Cl. 357-71.000.
Harris, John F.; and Magill, Barrie J., to Fisons Limited. Process for preparing pyrogallol. 4,268,694, Cl. 568-763.000.
Harrow, James E.; and Kenney, Robert T., II, to Kansas City Structural Steel Co. Work-piece supported tool apparatus particularly adapted for use with large structural members. 4,268,196, Cl. 408-39.000.
Hartlaub, Jerome T.: *See*—
McDonald, Ray S.; and Hartlaub, Jerome T., 4,267,843, Cl. 128-419.0PT.
Hartmann, Ferdinand, to Austria Email Aktiengesellschaft. Apparatus for coating articles with enamel slip. 4,267,794, Cl. 118-50.000.
Hartmann, Max; and Thuringer, Ferdinand, to BBC Brown, Boveri & Co., Ltd. Cooling-air nozzle for use in a heated chamber. 4,267,698, Cl. 60-756.000.
Hartmann, Rudolf, to Bell & Howell Company. Color-separating optical system. 4,268,119, Cl. 350-173.000.
Harvey, Frederick W.; Sethi, Gurdip S.; and Sikorski, Stephen L., to Eastman Kodak Company. Film cartridge assembly. 4,268,145, Cl. 354-121.000.
Hashida, Wataru: *See*—
Matsuo, Takaharu; Sawamura, Norio, both of Osaka; Hashimoto, Yukio; and Hashida, Wataru, 4,268,527, Cl. 426-33.000.
Hashimoto, Akira: *See*—
Nakayama, Muneo; Nishimura, Toshihiro; Hashimoto, Akira; Nakane, Hisashi; and Kimura, Teruo, 4,268,539, Cl. 427-108.000.
Hashimoto, Hidehisa: *See*—
Uemura, Noboru; Hatakeyama, Shunzo; and Hashimoto, Hidehisa, 4,267,986, Cl. 242-199.000.
Hashimoto, Kazuyuki: *See*—
Ebisawa, Kiyohito; Hisabayashi, Satoshi; Hashimoto, Kazuyuki; Kuromori, Mitsuo; and Koike, Toshio, 4,268,162, Cl. 355-14.00R.
Hashimoto, Kinro: *See*—
Maeda, Akio; Hashimoto, Kinro; Inagami, Masaaki; and Fukushima, Hiroshi, 4,268,644, Cl. 525-403.000.
Hashimoto, Mitsuru: *See*—
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,268,596, Cl. 430-72.000.
Hashimoto, Shunichi: *See*—
Uematsu, Tamon; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,268,301, Cl. 71-90.000.
Hashimoto, Yukio: *See*—
Matsuo, Takaharu; Sawamura, Norio, both of Osaka; Hashimoto, Yukio; and Hashida, Wataru, 4,268,527, Cl. 426-33.000.
Hashimura, Taiji, to Fuji Photo Film Co., Ltd. Bleaching composition for photographic processing. 4,268,618, Cl. 430-393.000.
Hata, Hiroshi: *See*—
Fujii, Shinichi; and Hata, Hiroshi, 4,268,280, Cl. 55-54.000.
Hatakeyama, Shunzo: *See*—
Uemura, Noboru; Hatakeyama, Shunzo; and Hashimoto, Hidehisa, 4,267,986, Cl. 242-199.000.

Hatuse, Toshikazu: *See*—
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.

Haubner, Georg: *See*—
Wesemeyer, Jurgen; Haubner, Georg; Meier, Werner; and Schrumpf, Hans, 4,267,810, Cl. 123-416.000.

Haupt, Fritz, to Maag Gearwheel & Machine Company Ltd. Intermeshing gear pump with sealing means comprising two concentric slide rings. 4,268,232, Cl. 418-135.000.

Hauptman, Zdenek V.: *See*—
Banister, Arthur J.; Fielder, Andrew J.; Hauptman, Zdenek V.; and Smith, Nigel R. M., 4,268,491, Cl. 423-406.000.

Hausen, Manfred Z.: *See*—
Lange, Erhard; and Hausen, Manfred Z., 4,268,695, Cl. 568-864.000.

Hausermann, Alfred, to BBC Brown, Boveri & Co., Ltd. Turning device especially for driving a turbine shaft. 4,267,738, Cl. 74-8.000.

Hawkinson, Leon A. Refuse receiving assembly. 4,268,081, Cl. 294-55.000.

Hawo B.V.: *See*—
Wolters, Hendrik W., 4,268,237, Cl. 425-116.000.

Hay, Louis E.: *See*—
Friz, Walter, 4,268,778, Cl. 315-3.500.

Hayakawa Associates: *See*—
O'Halloran, John T., 4,267,824, Cl. 126-426.000.

Hayashi, Hidetoshi: *See*—
Fujita, Shinsaku; Hayashi, Hidetoshi; Ono, Shigetoshi; Yoshida, Yoshinobu; and Harada, Tooru, 4,268,625, Cl. 430-562.000.

Hayes, John, to Tiger Manufacturing Company. Disposable plastic trap bag. 4,268,392, Cl. 210-238.000.

Heath, Charles A. Lawn mower having flexible filament cutter elements. 4,267,686, Cl. 56-12.700.

Hedger, John H. Reciprocating engine with improved feed and exhaust valve means. 4,267,765, Cl. 91-186.000.

Hedrick, Charles L.: *See*—
Fowler, Neal G.; and Hedrick, Charles L., 4,267,682, Cl. 52-657.000.

Heemstra, Theodore C. Tufting machine. 4,267,784, Cl. 112-80.000.

Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., to Janssen Pharmaceutica N.V. Heterocyclic derivatives of 1-(1,3-dioxolan-2-ylmethyl)-1H-imidazoles and 1H-1,2,4-triazoles. 4,268,680, Cl. 548-336.000.

Heeschen, Ulf: *See*—
Weber, Robert; Ring, Stefan; and Heeschen, Ulf, 4,268,755, Cl. 250-506.000.

Heiber, Wolfgang: *See*—
Kohmann, Karl-Heinz; and Heiber, Wolfgang, 4,268,261, Cl. 493-231.000.

Heimann GmbH: *See*—
Herwig, Thomas; and Doenges, Gerhard, 4,268,752, Cl. 250-353.000.

Heinz, Richard A. Protected pivot adjustable scaled compasses. 4,267,638, Cl. 33-27.00C.

Helix Technology Corporation: *See*—
Toscano, William M., 4,267,701, Cl. 62-86.000.

Heller, Arthur; Schaumberger, Alfred; Schuster, Klaus; and Dollinger, Friedrich, to U.S. Philips Corporation. Signal generator. 4,268,851, Cl. 358-10.000.

Hellige GmbH: *See*—
Orzikowski, Gunter, 4,268,837, Cl. 346-75.000.

Hellin, Michel: *See*—
Dang Vu, Quang; Juguin, Bernard; Torck, Bernard; and Hellin, Michel, 4,268,700, Cl. 585-302.000.
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,268,701, Cl. 585-329.000.

Hemgren, Sven A., to Esselte Pendaflex Corp. Device for separating tape portions from a tape of flexible material. 4,267,949, Cl. 225-106.000.

Hemmerich, Heinz P.: *See*—
Schulte-Huermann, Werner; and Hemmerich, Heinz P., 4,268,458, Cl. 564-305.000.

Hemmerich, Johann, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Thermal radiation shield. 4,267,707, Cl. 62-514.00R.

Henbest, Richard G. C.; and McGregor, Kenneth. Modified urea formaldehyde resin fiber paper. 4,268,351, Cl. 162-146.000.

Hendricks, Udo-Winfried; Hildebrand, Dietrich; and Kuth, Robert, to Bayer Aktiengesellschaft. Process for dyeing and printing cellulose fibres with reactive dyestuffs. 4,268,266, Cl. 8-543.000.

Hendriksen, Errol C. Method and apparatus for aligning automobile suspension members. 4,267,896, Cl. 180-73.00R.

Hendrix, Jerry W.: *See*—
Hendrix, Robert W.; and Hendrix, Jerry W., 4,267,783, Cl. 111-52.000.

Hendrix, Robert W.; and Hendrix, Jerry W. Seed bed preparation method and apparatus. 4,267,783, Cl. 111-52.000.

Hendry, Harold M. Adjustable lubrication quality indicator-protector for engines and other machines. 4,267,722, Cl. 73-10.000.

Hendy, Brian N., to Imperial Chemical Industries Limited. Antistatic films. 4,268,583, Cl. 428-516.000.

Henke, Detlef. Process for cultivation of mushrooms and mushroom nursing plant for carrying out the process and air conditioning plant for the mushroom nursing plant. 4,267,664, Cl. 47-1.100.

Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA): *See*—
Bechstedt, Wolfgang, 4,268,262, Cl. 8-137.000.
Bruns, Klaus; and Meins, Peter, 4,268,443, Cl. 260-340.300.

Henrion, W. S.; and Erickson, Raymond K., to Texas Instruments Incorporated. Solid state keyboard. 4,268,814, Cl. 338-32.00H.

Henry, Ralph A., to General Electric Company. Single UHF/VHF antenna system. 4,268,834, Cl. 343-858.000.

Herbert Hanchen KG: *See*—
Hanchen, Siegfried; and Fabrowsky, Hans D., 4,268,071, Cl. 285-18.000.

Herberts Gesellschaft mit beschrankter Haftung: *See*—
Bederke, Klaus; and Kerber, Hermann, 4,268,659, Cl. 528-288.000.

Herbst, David H., to Maryland Cup Corporation. Two-piece pleated foam cup. 4,268,335, Cl. 156-218.000.

Hercules Incorporated: *See*—
Roos, Leo, 4,268,610, Cl. 430-281.000.
Weldy, Winfred E., 4,268,637, Cl. 525-105.000.

Herman Miller, Inc.: *See*—
Randolph, Travis M.; and Newhouse, Thomas J., 4,267,677, Cl. 52-242.000.

Hermann Berstorff Maschinenbau GmbH: *See*—
Muller, Werner, 4,268,176, Cl. 366-83.000.

Heroid, Horst, to Petri AG. Unilaterally alternating backlash torque lock. 4,267,908, Cl. 192-8.00C.

Herold, Horst, to Petri AG. Unilaterally alternating backlash torque lock. 4,267,909, Cl. 192-8.00C.

Herper, John C.: *See*—
Valentino, Pasquale A.; Herper, John C.; and Stangel, John J., 4,268,831, Cl. 343-754.000.

Herrick, Carlyle S.; and Holub, Fred F., to General Electric Company. Method for forming Glauber's salt crystals of reduced size by including a fluorine-containing surfactant. 4,267,879, Cl. 165-1.000.

Herrick, Carlyle S.; and Zarnoch, Kenneth P., to General Electric Company. Method for forming Glauber's salt crystals with reduced encapsulation by the addition of ethylene glycol monobutyl ether. 4,268,405, Cl. 252-70.000.

Herring, Jimmy R.: *See*—
Hughen, James F.; Herring, Jimmy R.; Biedermann, David A.; and Ovens, Christopher W., 4,268,827, Cl. 340-715.000.

Herrington, F. John, Jr., to Mobil Oil Corporation. Tubular extrusion die. 4,268,239, Cl. 425-467.000.

Herrold, Anne M.: *See*—
Vargas, Ovidio; and Herrold, Anne M., 4,268,526, Cl. 424-358.000.

Herwig, Thomas; and Doenges, Gerhard, to Heimann GmbH. Optical arrangement for a passive infrared motion detector. 4,268,752, Cl. 250-353.000.

Herzstark, Curt, to BNA-Augustin GmbH & Co. KG. Apparatus for distribution of liquid test samples through various test stations. 4,268,477, Cl. 422-64.000.

Hess, Hans-Jurgen E.: *See*—
Eggler, James F.; and Hess, Hans-Jurgen E., 4,268,522, Cl. 424-305.000.

Hess, Ricky D.: *See*—
Buck, Daniel C.; and Hess, Ricky D., 4,268,797, Cl. 330-277.000.

Hester, Dewey S. Bee keeping apparatus. 4,267,613, Cl. 6-10.000.

Hey, David G.; and Wheelhouse, Robert W., to Imperial Chemical Industries Limited. Cleaning composition. 4,268,407, Cl. 252-171.000.

Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., to Heyer Inc. Electronic stencil cutter having means to vary size of reproduced picture. 4,268,869, Cl. 358-287.000.

Heyer Inc.: *See*—
Heyer, Arthur J.; Springer, Edward M.; and Clay, Wallace C., 4,268,869, Cl. 358-287.000.

Hibbert, Mark W. Window lever lock. 4,268,073, Cl. 292-113.000.

Hicks, Arthur W.; and Jolicoeur, Gerald D., to Jolicoeur, Gerald D. Wood-burning stove. 4,267,817, Cl. 126-60.000.

Hicks, Manuel G. Method of minimizing manganese dioxide sludge formation. 4,268,487, Cl. 423-210.000.

Higashihata, Yoshihide: *See*—
Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, 4,268,653, Cl. 526-255.000.

Higerd, Thomas B.; and Goust, Jean-Michel C. Immunosuppressive extracellular product from oral bacteria. 4,268,434, Cl. 260-112.00R.

Higgins, Bobby L.; and Johnson, Luther M., to Camsco, Inc. Stylus pen actuating switch. 4,268,730, Cl. 200-52.00R.

Hightower, John D.: *See*—
Poulos, Andrew C.; and Hightower, John D., 4,268,379, Cl. 209-5.000.

Hildebrand, Dietrich: *See*—
Hendricks, Udo-Winfried; Hildebrand, Dietrich; and Kuth, Robert, 4,268,266, Cl. 8-543.000.

Hill, Edwin W. Burner-fired combined with wood-fired apparatus for drying crops. 4,267,645, Cl. 34-213.000.

Hiniker Company: *See*—
Hodapp, Gary; Peterson, Richard; and Schulz, Richard, 4,267,767, Cl. 91-404.000.

Hipp, Steven J.: *See*—
Grunewald, Lynn O.; and Hipp, Steven J., 4,267,748, Cl. 74-529.000.

Hiraiwa, Kazuyoshi, to Nissan Motor Company, Limited. Clutch control apparatus of an automotive power transmission. 4,267,907, Cl. 192-3.560.

Hirakura, Koji: *See*—
Ebi, Yutaka; Hirakura, Koji; Matsumoto, Fuyuhiko; Ohta, Wasaburo; and Tomita, Satoru, 4,268,157, Cl. 355-3.0TR.

Hirano, Takashi; and Aga, Takashi, to Yamato Scale Company, Limited. Combination weighing device. 4,267,894, Cl. 177-25.000.
Hirata, Akio. Device for controlling a plurality of converters. 4,268,900, Cl. 363-71.000.
Hirota, Mitsuhiko: *See*—
Kawada, Shigeki; Oyama, Shigeaki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Nishimori, Toyohiko, 4,268,781, Cl. 318-434.000.
Kawada, Shigeki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Ohta, Naoto, 4,268,782, Cl. 318-434.000.
Hisabayashi, Satoshi: *See*—
Ebisawa, Kiyohito; Hisabayashi, Satoshi; Hashimoto, Kazuyuki; Kuromori, Mitsuo; and Koike, Toshio, 4,268,162, Cl. 355-14.00R.
Hisanaga, Akinori: *See*—
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,268,373, Cl. 204-252.000.
Hitachi Chemical Company, Ltd.: *See*—
Ueyama, Tamotsu; Wada, Yukihiko; Homma, Masaji; Aisawa, Hitoshi; Komatsu, Takayoshi; Shibata, Tatsuhisa; and Kamiyama, Hiroharu, 4,268,614, Cl. 430-315.000.
Hitachi, Ltd.: *See*—
Arashi, Norio; Murakami, Tadayoshi; Narato, Kiyoshi; Shiga, Masaaki; and Ishikawa, Tomihisa, 4,268,482, Cl. 422-171.000.
Ga, Eiichi; Chino, Koichi; Kikuchi, Makoto; Oda, Akira; and Horiuchi, Susumu, 4,268,409, Cl. 252-301.10W.
Ienaka, Masanori; Wada, Takeshi; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,268,762, Cl. 307-268.000.
Ishihara, Haruji; Shimokawa, Ryushi; Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; and Aratame, Kazuhisa, 4,268,136, Cl. 354-23.00D.
Kobori, Yasunori; Itoh, Toshi; Tokunaga, Yoichi; and Teshima, Tunehiko, 4,268,873, Cl. 360-9.000.
Koike, Norio; Hanamura, Shoji; and Kubo, Masaharu, 4,268,845, Cl. 357-30.000.
Meguro, Satoshi, 4,268,321, Cl. 148-1.500.
Hitt, William H., Jr., to Miller, Dale C. Solar collector for heating and cooling. 4,267,826, Cl. 126-440.000.
Hittel, Gerhard, to Karl Mayer Textilmaschinenfabrik GmbH. Twin-bedded warp knitting machine. 4,267,709, Cl. 66-87.000.
Hixson, J. Ellsworth: *See*—
Pike, Carl A.; and Hixson, J. Ellsworth, 4,267,690, Cl. 56-294.000.
Hizume, Akio: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Mitsuyama, Yoshiaki; and Tanaka, Shigeho, 4,267,734, Cl. 73-650.000.
Ho, Paul S.: *See*—
Ahn, Kie Y.; Bajorek, Christopher H.; Ho, Paul S.; Miller, Robert J.; and Powers, John V., 4,268,584, Cl. 428-620.000.
Hodapp, Gary; Peterson, Richard; and Schulz, Richard, to Hiniker Company. Position lock. 4,267,767, Cl. 91-404.000.
Hodkinson, Harold, to Automotive Products Limited. Hydraulic master cylinder. 4,267,697, Cl. 60-589.000.
Hodulik, Joseph W., to Libbey-Owens-Ford Company. Method of and apparatus for printing a pattern on a substrate. 4,268,545, Cl. 427-282.000.
Hoechst Aktiengesellschaft: *See*—
Ahlgrim, Michael; Mietens, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,268,404, Cl. 252-25.000.
Behringer, Hartmut; and Karrenbauer, Kurt, 4,268,437, Cl. 260-141.000.
Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,268,515, Cl. 424-267.000.
Hoff, Raymond E., to Chemplex Company. Polymerization catalyst. 4,268,418, Cl. 252-429.00B.
Hoffken, Erich; and Beckers, Karl-Dieter, to Martin & Pagenstecher GmbH. Process and device for producing the refractory lining of metallurgical vessels. 4,268,543, Cl. 427-230.000.
Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., to United States of America, National Aeronautics and Space Administration. Method for alleviating thermal stress damage in laminates. 4,267,953, Cl. 228-118.000.
Hoffman, Joseph A., to American Cyanamid Company. Cyclic diphosphonates. 4,268,459, Cl. 260-927.00R.
Hoffman, Michael R.: *See*—
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,268,565, Cl. 428-161.000.
Hoffman, Werner: *See*—
Kropp, Rudolf; Thoemel, Frank; Nuerrenbach, Axel; Hoffman, Werner; Wenisch, Franz; and Fuchs, Hartwig, 4,268,445, Cl. 260-345.200.
Hoffmann, Herbert: *See*—
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Hoffmann-La Roche Inc.: *See*—
Barner, Richard; and Hubscher, Josef, 4,268,453, Cl. 260-397.500.
Hohne, Gerd; and Sohner, Gerhard, to Robert Bosch GmbH. Ignition system with automatic increase in ignition energy during acceleration. 4,267,813, Cl. 123-609.000.
Hollandse Signaalapparaten B.V.: *See*—
Los, Lindert, 4,268,863, Cl. 358-160.000.
Hollis, Roger E.: *See*—
Dorner, John R.; Wiltse, Jon F.; and Hollis, Roger E., 4,268,769, Cl. 310-67.00R.
Holmes, James L.: *See*—
Brower, Boyd G.; Sindlinger, Ronald E.; and Holmes, James L., 4,268,891, Cl. 362-11.000.
Holmstrom, Sven N. H., to Tetra Pak International AB. Packing container and a laminate for its manufacture. 4,267,957, Cl. 229-37.00R.
Holson Company, The: *See*—
Holson, Sheldon, 4,267,655, Cl. 40-159.000.
Holson, Sheldon, to Holson Company, The. Print album. 4,267,655, Cl. 40-159.000.
Holub, Fred F.: *See*—
Herrick, Carlyle S.; and Holub, Fred F., 4,267,879, Cl. 165-1.000.
Homan, Gary R.; and Lee, Chi-Long, to Dow Corning Corporation. Ferrocene catalyzed elastomer formation. 4,268,655, Cl. 528-15.000.
Homma, Masaji: *See*—
Ueyama, Tamotsu; Wada, Yukihiko; Homma, Masaji; Aisawa, Hitoshi; Komatsu, Takayoshi; Shibata, Tatsuhisa; and Kamiyama, Hiroharu, 4,268,614, Cl. 430-315.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kamiya, Tadashi, 4,267,872, Cl. 152-209.00D.
Sakai, Kunitaka; and Ono, Jun, 4,268,085, Cl. 296-217.000.
Honeywell Information Systems Inc.: *See*—
Kindell, Jerry L.; and Flynn, Richard T., 4,268,909, Cl. 364-200.000.
Porter, Marion G.; Norman, Robert W., Jr.; and Flynn, Richard T., 4,268,907, Cl. 364-200.000.
Honeywill-Atlas Limited: *See*—
Allan, John J.; Foster, Richard G.; and Leversidge, Paul L., 4,268,410, Cl. 252-312.000.
Honma, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Dot printer wire. 4,268,180, Cl. 400-124.000.
Honor-Gard System: *See*—
Domkowski, Ronald A., 4,267,962, Cl. 232-15.000.
Hood, Ralph S. Sail furling and reefing apparatus. 4,267,790, Cl. 114-106.000.
Hooker Chemicals & Plastics Corp.: *See*—
Colson, James G.; Cooke, Victor F. G.; Day, F. Howard; and Fifolt, Michael J., 4,268,457, Cl. 260-544.00P.
Tang, David Y.; and Foster, Arthur M., 4,268,687, Cl. 560-105.000.
Hooper, Anthony W., to Uniweld Inc. Bark shredder. 4,267,982, Cl. 241-257.00R.
Hooper, Anthony W., to Uniweld Inc. Rotary pulp screening device of the vertical pressure type. 4,268,381, Cl. 209-273.000.
Hooton, Frank W. Elevator latch for drilling rigs. 4,268,082, Cl. 294-88.000.
Hoover, Delmer Q., Jr., to Westinghouse Electric Corp. Transpiration cooled electrodes and insulators for MHD generators. 4,268,765, Cl. 310-11.000.
Hoppe, Joachim A., to Schlumberger Technology Corporation. Pressure and temperature compensation means for a downhole force measuring device. 4,267,727, Cl. 73-151.000.
Hori, Kiyotaka: *See*—
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Nakagawa, Sadayoshi; and Shinohara, Mitsuharu, 4,268,725, Cl. 179-111.00E.
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Yoshikumi, Chikao; Omura, Yoshio; and Hotta, Tetsuya, 4,268,505, Cl. 424-180.000.
Hou, Ching-Tsang: *See*—
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Houk, William J., to Ranco Incorporated. Refrigeration system with refrigerant flow controlling valve. 4,267,702, Cl. 62-115.000.
House, Richard F.; Kohler, Karl A.; and Lewis, Philip W., to Container Corporation of America. Liquid tight tray. 4,267,956, Cl. 229-30.000.
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Lomax, George F., 4,267,979, Cl. 239-419.000.
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Hoy, Leslie R. J.; and Rose, John B., to Imperial Chemical Industries Limited. Aromatic polymers. 4,268,635, Cl. 525-68.000.
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Hubbard, William. Continuous timed segment broadcast recorder system. 4,268,724, Cl. 369-7.000.
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Hubscher, Josef: *See*—
Barner, Richard; and Hubscher, Josef, 4,268,453, Cl. 260-397.500.
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Allaman, Michael C.; Bailey, Leo T.; and Hudgins, Richard E., 4,267,754, Cl. 83-187.000.
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Mesco, Bernard, 4,268,123, Cl. 350-310.000.
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Hunter Douglas International N.V.: *See*—
Koks, Marinus F., 4,267,875, Cl. 160-176.00R.
Hunter, Glen E.: *See*—
Price, Herbert S.; and Hunter, Glen E., 4,268,088, Cl. 299-11.000.
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Rees, Herbert; and Schad, Robert D., 4,268,240, Cl. 425-548.000.
Rees, Herbert; and Schad, Robert D., 4,268,241, Cl. 425-549.000.
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Earnest, Ernest R., 4,267,692, Cl. 60-39.18R.
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Yabata, Hisao, 4,268,895, Cl. 362-307.000.
Ichikawa, Singo: *See*—
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.
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Aoyagi, Juuro; and Ichikawa, Toshizi, 4,268,463, Cl. 264-22.000.
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Ishibashi, Kazufumi; and Ichimura, Takeo, 4,268,312, Cl. 106-47.00Q.
ICI Americas Inc.: *See*—
Rauchut, Robert F.; and Caparoni, Louis J., 4,268,823, Cl. 340-570.000.
Shapiro, Howard S., 4,268,513, Cl. 424-258.000.
ICI Australia Limited: *See*—
Neville, Robert S., 4,268,490, Cl. 423-266.000.
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Suzuki, Yasoji; and Iida, Tetsuya, 4,268,761, Cl. 307-264.000.
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Method of electrolysis of an alkali metal chloride. 4,268,365, Cl. 204-98.000.
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Yokota, Tsuneshi; and Ike, Toshio, 4,268,868, Cl. 358-286.000.
Ikeda, Tomoaki; Yoshida, Satoshi; Takeuchi, Hideaki; Shinozaki, Fumiaki; and Kido, Keishiro, to Fuji Photo Film Co., Ltd. Process for producing a material having a vapor-deposited metal layer, and process for producing a recording material. 4,268,541, Cl. 427-177.000.
Ikeda, Tomoaki: *See*—
Namiki, Tomizo; Shinozaki, Fumiaki; and Ikeda, Tomoaki, 4,268,601, Cl. 430-159.000.
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,268,575, Cl. 428-336.000.
Iki, Tetsuo: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
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Illinois Tool Works Inc.: *See*—
Bloink, Harry W.; and Huber, Walter G., 4,268,194, Cl. 407-22.000.
Loudin, Philip B., 4,267,941, Cl. 220-85.0SP.
Imahori, Seiichi; Murata, Yukichi; Maeda, Syuichi; and Suzuki, Sumio, to Mitsubishi Chemical Industries Ltd. Fluorescent dyes. 4,268,671, Cl. 544-245.000.
Imamichi, Yoshio, to Mizuno Sporting Goods Co., Ltd. Double knit fabric with patterned loop interlocking. 4,267,710, Cl. 66-196.000.
Imanaka, Hiroshi; and Nishida, Minoru, to Fujisawa Pharmaceutical Co., Ltd. Antibacterial composition. 4,268,503, Cl. 424-114.000.
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Tamminen, Pentti J., 4,268,589, Cl. 429-207.000.
Imayasu, Tomoyoshi: *See*—
Isono, Katsuo; and Imayasu, Tomoyoshi, 4,268,857, Cl. 358-67.000.
Imperial Chemical Industries Limited: *See*—
Backhouse, Alan J., 4,268,547, Cl. 427-385.500.
Boyle, Francis T.; and Taylor, Michael A., 4,268,510, Cl. 424-248.530.
Galt, Ronald H. B.; and Pearce, Robert J., 4,268,514, Cl. 424-267.000.
Hendy, Brian N., 4,268,583, Cl. 428-516.000.
Hey, David G.; and Wheelhouse, Robert W., 4,268,407, Cl. 252-171.000.
Hoy, Leslie R. J.; and Rose, John B., 4,268,635, Cl. 525-68.000.
Maslen, John; and Nield, Eric, 4,268,432, Cl. 260-45.75B.
Nightingale, Douglas D. J., 4,268,472, Cl. 264-230.000.
Rose, John B., 4,268,650, Cl. 525-534.000.
Inada, Yutaka: *See*—
Kaneko, Dentaro; Onoda, Mamoru; Kimura, Yoshio; Inada, Yutaka; and Tomita, Masahiro, 4,268,303, Cl. 75-34.000.
Inagami, Masaaki: *See*—
Maeda, Akio; Hashimoto, Kinro; Inagami, Masaaki; and Fukushima, Hiroshi, 4,268,644, Cl. 525-403.000.
Inco Research & Development Center Inc.: *See*—
Hall, Dale E., 4,268,364, Cl. 204-43.00Z.
Industra Products, Inc.: *See*—
Walker, Robert G., 4,267,719, Cl. 72-122.000.
Industriewerke Schaeffler OHG: *See*—
Gugel, Georg, 4,267,625, Cl. 29-148.40A.
Ing. C. Olivetti & C., S.p.A.: *See*—
Becchi, Raffaele; Giacone, Felice; and Accattino, Andrea, 4,268,747, Cl. 250-231.0SE.
Subrizi, Angelo; and Violino, Ettore, 4,268,901, Cl. 364-200.000.
Ingham, Gary G. Balanced door. 4,267,667, Cl. 49-252.000.
Ingouf, Jean-Pierre. Jib roller systems. 4,267,791, Cl. 114-106.000.
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Inoue, Morio: *See*—
Uragaki, Tamotsu; Inoue, Morio; Koike, Susumu; and Iwasa, Hitoo, 4,268,327, Cl. 148-171.000.
Inoue, Nobuaki: *See*—
Adachi, Keiichi; Kato, Eiichi; Inoue, Nobuaki; and Kojima, Tetsurou, 4,268,622, Cl. 430-513.000.
Institut Francais du Petrole: *See*—
Dang Vu, Quang; Juguin, Bernard; Torck, Bernard; and Hellin, Michel, 4,268,700, Cl. 585-202.000.
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,268,701, Cl. 585-329.000.
Institut fur Biomedizinische Technik: *See*—
Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, 4,268,367, Cl. 204-149.000.
Institutes of Medical Sciences, The: *See*—
Persidsky, Maxim D.; and Ling, Nan-Sing, 4,268,393, Cl. 210-516.000.
Institutul de Cercetari si Modernizari Energetice: *See*—
Gheorghiu, Nicolae; and Guzun, Basarab D., 4,268,732, Cl. 200-148.00R.
Instrumentation Laboratory Inc.: *See*—
Webster, Milo E., 4,268,479, Cl. 422-68.000.
Intel Corporation: *See*—
Shappir, Joseph, 4,267,632, Cl. 29-571.000.
International Business Machines Corporation: *See*—
Ahn, Kie Y.; Bajorek, Christopher H.; Ho, Paul S.; Miller, Robert J.; and Powers, John V., 4,268,584, Cl. 428-620.000.
Aviram, Ari; Pennington, Keith S.; and Kuhn, Lawrence, 4,268,368, Cl. 204-181.00C.

Berglund, Neil C.; and Nieling, James R., 4,268,902, Cl. 364-200.000.
Bohg, Armin; and Briska, Marian, 4,267,823, Cl. 126-422.000.
Bourke, Donall G.; Mendelson, Richard N.; and Madruga, Luis, 4,268,906, Cl. 364-200.000.
Bradmon, Paul J., 4,268,165, Cl. 355-55.000.
Kekas, Dennis H.; McAdams, Ronald P.; and Polischuk-Sawtschenko, Alexander, 4,268,100, Cl. 339-17.0LM.
Logue, Joseph C.; and Wu, Wei-Wha, 4,268,908, Cl. 364-200.000.
Noel, Francis E., Jr., 4,268,113, Cl. 350-96.200.
Watrous, Robert B., 4,268,879, Cl. 360-104.000.

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Agrawal, Bhagwati P.; and Shenoi, Kishan, 4,268,727, Cl. 179-170.200.
Peterson, Kenneth P., 4,268,112, Cl. 350-96.180.

Interpace Corporation: *See—*
Tashlick, Irving, 4,268,047, Cl. 277-207.00A.

INTERx Research Corporation: *See—*
Bodor, Nicholas S.; and Sloan, Kenneth B., 4,268,441, Cl. 260-239.500.

Inventa AG fur Forschung und Patentverwertung, Zurich: *See—*
Schmid, Eduard; and Griehl, Wolfgang, 4,268,661, Cl. 528-338.000.

Irving, Robert W.: *See—*
Davis, George B.; and Irving, Robert W., 4,267,769, Cl. 98-33.00A.

Ishibashi, Kazufumi; and Ichimura, Takeo, to Nippon Kogaku K.K. Optical glass. 4,268,312, Cl. 106-47.00Q.

Ishigaki, Kunio: *See—*
Sera, Hidefumi; Kitatani, Katuzi; Ogawa, Masasi; Ishigaki, Kunio; and Shiraishi, Hisashi, 4,268,627, Cl. 430-623.000.

Ishihara, Haruji; Shimokawa, Ryushi; Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; and Aratame, Kazuhisa, to Konishiroku Photo Industry Co., Ltd.; and Hitachi, Ltd. Camera having an automatic exposure control means. 4,268,136, Cl. 354-23.00D.

Ishihara, Kenji: *See—*
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,267,853, Cl. 137-67.000.

Ishikawa, Shozo: *See—*
Katagiri, Kazuharu; Ishikawa, Shozo; Ohta, Shigeto; and Kitahara, Makoto, 4,268,595, Cl. 430-48.000.

Ishikawa, Tomihisa: *See—*
Arashi, Norio; Murakami, Tadayoshi; Narato, Kiyoshi; Shiga, Masaaki; and Ishikawa, Tomihisa, 4,268,482, Cl. 422-171.000.

Isono, Katsuo; and Imayasu, Tomoyoshi, to Sony Corporation. Beam index color television receiver apparatus. 4,268,857, Cl. 358-67.000.

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Robillard, Jean J.; and Riou, Claude R., 4,268,600, Cl. 430-142.000.

Itek Corporation: *See—*
Baratelli, Charles A.; and Baratelli, Aletha V., 4,267,923, Cl. 206-5.000.
Ford, Peter W., 4,268,110, Cl. 350-6.700.

Ito, Eiichi: *See—*
Taura, Miyako, 4,268,272, Cl. 44-3.00R.

Ito, Yoshinobu: *See—*
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Itoh, Toshi: *See—*
Kobori, Yasunori; Itoh, Toshi; Tokunaga, Yoichi; and Teshima, Tunehiko, 4,268,873, Cl. 360-9.000.

Itoi, Toshihiro, to Kabushiki Kaisha Itoi Seisakusho. Cash box provided with a till. 4,268,076, Cl. 292-216.000.

ITT Industries, Inc.: *See—*
Belart, Juan, 4,267,904, Cl. 188-73.300.

Ivanov, Jury P.; Evstafiev, Evgeny A.; and Tarasov, Alexandr E. Method of assembling middle body of a vessel hull. 4,267,789, Cl. 114-65.00R.

Iwabuchi, Toshiyuki: *See—*
Nakano, Kazuo; Iwabuchi, Toshiyuki; and Yamamoto, Ichiji, 4,268,838, Cl. 346-76.0PH.

Iwaki, Yoshiyuki; and Fujioka, Katsuhiko, to Mitsubishi Denki Kabushiki Kaisha. Alternating current generator with radio noise suppressing capacitor. 4,268,770, Cl. 310-72.000.

Iwakiri, Norio, to Omron Tateisi Electronics Co. Pushbutton pilot switch. 4,268,735, Cl. 200-314.000.

Iwama, Kiyonori: *See—*
Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, 4,268,653, Cl. 526-255.000.

Iwamoto, Akira: *See—*
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Iwamoto, Tsutomu: *See—*
Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, 4,268,653, Cl. 526-255.000.

Iwanaga, Kazuyoshi: *See—*
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,267,910, Cl. 192-17.00R.

Iwao, Soichi: *See—*
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Iwasa, Hitoo: *See—*
Uragaki, Tamotsu; Inoue, Morio; Koike, Susumu; and Iwasa, Hitoo, 4,268,327, Cl. 148-171.000.

Iwasa, Yoshisuke; and Sakura, Shigehiko, to Sumitomo Bakelite Company Limited. Electrical article having electrical coil and method for manufacturing same. 4,268,810, Cl. 336-205.000.

Iwasaki, Yuichiro: *See—*
Yamamoto, Katsuji; Iwasaki, Yuichiro; Adachi, Akira; Kawata, Toshiro; Nagano, Keisuke; Fujita, Seiichi; and Harada, Mikio, 4,268,295, Cl. 65-19.000.

Iwata, Masahiro; and Taka, Yuichi, to Pentel Kabushiki Kaisha. Microcapsules having a wall of inorganic substance and process for the preparation thereof. 4,268,411, Cl. 252-316.000.

Iwatsu Electric Co., Ltd.: *See—*
Ebisawa, Kiyohito; Hisabayashi, Satoshi; Hashimoto, Kazuyuki; Kuromori, Mitsuo; and Koike, Toshio, 4,268,162, Cl. 355-14.00R.
Kokaji, Norio; Kinoshita, Kunio; Urano, Toshihiro; and Saitoh, Katsunori, 4,268,872, Cl. 358-301.000.

Iwayama, Kenzo; and Tanaka, Osamu, to Nippon Steel Corporation. Process for producing grain oriented electrical silicon steel sheet. 4,268,326, Cl. 148-113.000.

Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, to Konishiroku Photo Industry Co., Ltd. Method of processing of light-sensitive silver halide photographic material. 4,268,620, Cl. 430-403.000.

Izraeli, Hyman, to Thomas & Betts Corporation. Apparatus for installing cable coverings. 4,267,628, Cl. 29-235.000.

J. B. Foote Foundry Co., The: *See—*
Edwards, Douglas F., 4,267,745, Cl. 74-476.000.

J.C. Penney Company Inc.: *See—*
Beck, Joseph H.; and Orilio, Paul F., 4,267,967, Cl. 236-49.000.

J. Hengstler K.G.: *See—*
Pfeiffer, Horst, 4,268,743, Cl. 235-130.00R.

J. I. Case Company: *See—*
Engelmann, Roger F.; and Thurler, James E., 4,268,057, Cl. 280-474.000.

J. M. Voith GmbH: *See—*
Schiel, Christian, 4,267,644, Cl. 34-110.000.

Jacob, Guy M.; and Boulou, Michel, to U.S. Philips Corporation. Electroluminescent gallium nitride semiconductor device. 4,268,842, Cl. 357-17.000.

Jacobson, Peter E., to Sperry Corporation. Force balanced vibratory rate sensor. 4,267,731, Cl. 73-505.000.

Jacquet, Maurice A., to Societe Anonyme Francaise du Ferodo. Air distribution device. 4,267,880, Cl. 165-41.000.

Jaedicke, Hagen, to BASF Aktiengesellschaft. Preparation of polyenealdehydes. 4,268,444, Cl. 260-340.700.

Jahn, Kornel: *See—*
Hanke, Reinhard; and Jahn, Kornel, 4,268,382, Cl. 209-273.000.

Jakubowski, Thomas M.; and Wood, William G., to Kolene Corp. Process for case hardening steel. 4,268,323, Cl. 148-15.500.

Jankowiak, Roman: *See—*
Naab, Carlton W.; and Jankowiak, Roman, 4,267,854, Cl. 137-72.000.

Janome Sewing Machine Co. Ltd.: *See—*
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,267,786, Cl. 112-168.000.

Janssen Pharmaceutica N.V.: *See—*
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,268,680, Cl. 548-336.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Shimokawa, Shin-ichi; Yamamoto, Yuji; and Nagai, Hisao, 4,268,638, Cl. 525-263.000.
Yoshida, Yoshinori; and Oka, Hiroshi, 4,268,447, Cl. 260-346.110.

Jarl, Stig; Eker, Per-Olof; and Davidsson, Peter, to AB Volvo. Vehicle gearbox. 4,267,741, Cl. 74-339.000.

Jaskolski, Stanley V.: *See—*
Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., 4,268,846, Cl. 357-38.000.

Jellinek, Karl; and Muller, Rolf, to Rutgerswerke Aktiengesellschaft. Binder for cellulose fiber reinforced board material. 4,268,649, Cl. 525-504.000.

Jervis, James E., to Raychem Corporation. Process for preparing a hermetically sealed assembly. 4,268,329, Cl. 156-51.000.

Jeschke, Peter: *See—*
Eschner, Axel; Leupold, Hermann; and Jeschke, Peter, 4,268,016, Cl. 266-236.000.

Jidosha Kiki Co. Ltd.: *See—*
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Jimmy Dean Meat Company, Inc., The: *See—*
Bernard, Vincent E., 4,268,532, Cl. 426-231.000.

Jitsumori, Tsuneharu. Automobile mirror device. 4,268,120, Cl. 350-302.000.

Johann, Donald F.; and Mendenhall, Charles E., to Sperry Rand Corporation. Autonomous fault diagnosis for disk drive using an internal microprocessor. 4,268,905, Cl. 364-200.000.

John Blue Company: *See—*
Johnston, Douglas, 4,267,971, Cl. 239-11.000.

Johnson, Axel R.; and Woebcke, Herman N. Sequential thermal cracking process. 4,268,375, Cl. 208-72.000.

Johnson, Bruce K., to Polaroid Corporation. Camera with folding flash unit. 4,268,146, Cl. 354-145.000.

Johnson, Charles M., to Napco, Inc. Article treating machine. 4,268,206, Cl. 414-222.000.

Johnson Controls, Inc.: *See—*
Everett, William F., 4,267,965, Cl. 236-1.00G.
Trobaugh, Arnold G., 4,268,383, Cl. 210-103.000.

Johnson, Donald T., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming glass filaments. 4,268,292, Cl. 65-2.000.

Johnson, Gordon E.: *See—*
Schank, Richard L.; and Johnson, Gordon E., 4,268,840, Cl. 346-135.100.

Johnson & Johnson: *See*—
Lazar, Lawrence S.; and Wittemann, Robert F., 4,267,840, Cl. 128-303.130.
Sung, Pei; Klaus, Irving; and Lee-You, James, 4,268,308, Cl. 75-171.000.
Johnson, Luther M.: *See*—
Higgins, Bobby L.; and Johnson, Luther M., 4,268,730, Cl. 200-52.00R.
Johnson, Michael R.: *See*—
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,268,523, Cl. 424-308.000.
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,268,692, Cl. 568-326.000.
Johnson, Stephen C., to Signetics Corporation. Conditioning circuit for use with I^2L and ISL logic arrays embodying two power supplies. 4,268,763, Cl. 307-605.000.
Johnston, Douglas, to John Blue Company. Method and means of presetting the output rate of a centrifugal pump agricultural metering system. 4,267,971, Cl. 239-11.000.
Johnston, Thomas F., Jr.; and Proffitt, William P., to Coherent, Inc. Vertex-mounted tipping Brewster plate for a ring laser. 4,268,800, Cl. 331-94.50C.
Jolicoeur, Gerald D.: *See*—
Hicks, Arthur W.; and Jolicoeur, Gerald D., 4,267,817, Cl. 126-60.000.
Jones, Charles: *See*—
Corwin, Howard R.; and Jones, Charles, 4,268,231, Cl. 418-60.000.
Jones, Elwyn D., to Glopak Industries Limited. Method and apparatus for coupon insertion. 4,268,344, Cl. 156-383.000.
Jones, Larren F.: *See*—
Hahn, Frederick C.; and Jones, Larren F., 4,267,653, Cl. 37-142.00A.
Jones, Thomas H.: *See*—
Muzyczko, Thaddeus M.; and Jones, Thomas H., 4,268,608, Cl. 430-270.000.
Jorgensen, Villy E.: *See*—
Mogensen, Vagn; Jorgensen, Villy E.; and Krebs, Peter, 4,267,878, Cl. 164-187.000.
Joyce, James F.: *See*—
Gedeon, Harvey; Joyce, James F.; and Kellner, David, 4,268,498, Cl. 424-59.000.
Juguin, Bernard: *See*—
Dang Vu, Quang; Juguin, Bernard; Torck, Bernard; and Hellin, Michel, 4,268,700, Cl. 585-302.000.
Jundt, Werner: *See*—
Bodig, Bernd; and Jundt, Werner, 4,268,888, Cl. 361-236.000.
Jung, Johann: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,268,300, Cl. 71-76.000.
Kabushiki Kaisha Itoi Seisakusho: *See*—
Itoi, Toshihiro, 4,268,076, Cl. 292-216.000.
Kabushiki Kaisha Ricoh: *See*—
Kojima, Kenji, 4,268,026, Cl. 271-121.000.
Kabushiki Kaisha Togawa Gomu Seizosho: *See*—
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,267,853, Cl. 137-67.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Nakayama, Shozo; Kato, Kimio; and Fujii, Tomoo, 4,268,225, Cl. 417-269.000.
Kagota, Nobuhiro: *See*—
Tsukahara, Hirokazu; Fuchigami, Mitsuru; and Kagota, Nobuhiro, 4,268,634, Cl. 525-471.000.
Kalfoglou, George, to Texaco Inc. Lignosulfonates carboxylated with chloroacetic acid as additives in oil recovery processes involving chemical recovery agents. 4,267,886, Cl. 166-273.000.
Kamada, Kensuke: *See*—
Shindo, Mizuo; Yamamoto, Takashi; and Kamada, Kensuke, 4,268,279, Cl. 55-16.000.
Kamakur, Masatoshi: *See*—
Yamagiwa, Kazuo; Kamakur, Masatoshi; and Numakura, Toshihiko, 4,268,874, Cl. 360-10.000.
Kambara, Masahiro: *See*—
Morio, Minoru; Kambara, Masahiro; Kubota, Yukio; and Yamashita, Keitaro, 4,268,875, Cl. 360-10.000.
Kamiya, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha. Vehicle tire with tread having circumferentially varying rigidity. 4,267,872, Cl. 152-209.00D.
Kamiyama, Hiroharu: *See*—
Ueyama, Tamotsu; Wada, Yukihiko; Homma, Masaji; Aisawa, Hitoshi; Komatsu, Takayoshi; Shibata, Tatsuhisa; and Kamiyama, Hiroharu, 4,268,614, Cl. 430-315.000.
Kamogawa, Nin-ichi; and Yamazaki, Yoshio, to Konishiroku Photo Industry Co., Ltd. Apparatus for developing electrostatic latent image. 4,267,796, Cl. 118-658.000.
Kanai, Takao: *See*—
Nishikawa, Yasuhisa; and Kanai, Takao, 4,267,739, Cl. 74-10.330.
Kanamori, Kyozo: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Mitsuyama, Yoshiaki; and Tanaka, Shigeho, 4,267,734, Cl. 73-650.000.
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Motosugi, Katsuhiko, to Toyota Jidosha Kogyo Kabushiki Kaisha. High compression type internal combustion engine. 4,267,806, Cl. 123-287.000.
Kandler, Joachim: *See*—
Ahlgrim, Michael; Mietens, Gerhard; Dany, Franz-Josef; and Kandler, Joachim, 4,268,404, Cl. 252-25.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,365, Cl. 204-98.000.
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,268,373, Cl. 204-252.000.
Iizima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,372, Cl. 204-252.000.
Suzuki, Kazuo; and Yokota, Kenichi, 4,268,430, Cl. 260-37.00R.
Kaneko, Dentaro; Onoda, Mamoru; Kimura, Yoshio; Inada, Yutaka; and Tomita, Masahiro, to Kobe Steel, Limited. Direct reduction process for producing reduced iron. 4,268,303, Cl. 75-34.000.
Kano, Toshiji: *See*—
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,365, Cl. 204-98.000.
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,268,373, Cl. 204-252.000.
Iizima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,372, Cl. 204-252.000.
Kansai Electric Power Co. Inc., The: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Kansas City Structural Steel Co.: *See*—
Harrow, James E.; and Kenney, Robert T., II, 4,268,196, Cl. 408-39.000.
Kantz, John F., to Union Carbide Corporation. Wide-folding hinge. 4,268,555, Cl. 428-35.000.
Kao Soap Company: *See*—
Kawada, Tsukasa; and Tanaka, Yukitaka, 4,268,534, Cl. 426-607.000.
Kaplan, Dov, to Dickey-john Corporation. System for monitoring the movement of objects particularly the feeding of seeds. 4,268,825, Cl. 340-684.000.
Karikas, John J., to General Electric Company. Method and apparatus for handling and dispensing hygroscopic pellets. 4,267,943, Cl. 222-1.000.
Karl Mayer Textilmaschinenfabrik GmbH: *See*—
Hittel, Gerhard, 4,267,709, Cl. 66-87.000.
Karrenbauer, Kurt: *See*—
Behringer, Hartmut; and Karrenbauer, Kurt, 4,268,437, Cl. 260-141.000.
Kashima, Yoshinobu: *See*—
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.
Kashiwara, Tomokazu: *See*—
Kimura, Tamisuke; Kashiwara, Tomokazu; and Yamaguchi, Tetsuo, 4,267,792, Cl. 114-219.000.
Kasuga, Noboru: *See*—
Hanyu, Susumu; Kasuga, Noboru; Hara, Kazumasa; and Watanabe, Koichi, 4,267,786, Cl. 112-168.000.
Katagiri, Kazuharu; Ishikawa, Shozo; Ohta, Shigeto; and Kitahara, Makoto, to Copyer Co., Ltd. Electrostatic recording material and method for the production thereof. 4,268,595, Cl. 430-48.000.
Kato, Eiichi: *See*—
Adachi, Keiichi; Kato, Eiichi; Inoue, Nobuaki; and Kojima, Tetsurou, 4,268,622, Cl. 430-513.000.
Kato, Kimio: *See*—
Nakayama, Shozo; Kato, Kimio; and Fujii, Tomoo, 4,268,225, Cl. 417-269.000.
Kato, Satoshi: *See*—
Onishi, Shigeru; and Kato, Satoshi, 4,268,461, Cl. 261-39.00B.
Katoh, Michio: *See*—
Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, 4,268,337, Cl. 156-244.170.
Katsuragi, Tadakatsu: *See*—
Ogawa, Tetsuya; Yoshizaki, Norio; Katsuragi, Tadakatsu; Nakamura, Makoto; and Shiiba, Kiyonori, 4,268,362, Cl. 203-28.000.
Kawada, Shigeki; Oyama, Shigeaki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Nishimori, Toyohiko, to Fujitsu Fanuc Limited. DC Motor drive system. 4,268,781, Cl. 318-434.000.
Kawada, Shigeki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Ohta, Naoto, to Fujitsu Fanuc Limited. Control system for a DC motor. 4,268,782, Cl. 318-434.000.
Kawada, Tsukasa; and Tanaka, Yukitaka, to Kao Soap Company. Method for producing hard butter. 4,268,534, Cl. 426-607.000.
Kawai, Hisasi: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.
Kawai Musical Instrument Mfg. Co. Ltd.: *See*—
Deutsch, Ralph, 4,267,761, Cl. 84-1.010.

Kawakami, Katsuhiko; Komori, Kenji; and Megumi, Hiroshi, to Nippon Mining Co., Ltd. Method for removing and treating waste catalyst. 4,268,414, Cl. 252-412.000.

Kawakami, Tomiko: *See—*
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,268,596, Cl. 430-72.000.

Kawamura, Naoto, to Canon Kabushiki Kaisha. Scanning optical system for formation of a half tone image. 4,268,871, Cl. 358-298.000.

Kawamura, Naoto: *See—*
Kitamura, Takashi; Sakamaki, Hisashi; and Kawamura, Naoto, 4,268,870, Cl. 358-296.000.

Kawamura, Shigeo: *See—*
Konno, Yutaka; and Kawamura, Shigeo, 4,268,501, Cl. 424-80.000.

Kawanobe, Kouhei: *See—*
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See—*
Goto, Takeshi; Tanaka, Akio; and Suzuki, Yasuo, 4,267,975, Cl. 239-83.000.

Kawashima, Yutaka: *See—*
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.

Kawata, Toshiro: *See—*
Yamamoto, Katsuji; Iwasaki, Yuichiro; Adachi, Akira; Kawata, Toshiro; Nagano, Keisuke; Fujita, Seiichi; and Harada, Mikio, 4,268,295, Cl. 65-19.000.

Kawneer Company, Inc.: *See—*
Coulston, Ellwin L., 4,267,673, Cl. 52-97.000.

Kearns, William J., to New World Computer Company, Inc. Gas circulation and filtration apparatus for magnetic disc recording systems. 4,268,878, Cl. 360-97.000.

Keeler Brass Company: *See—*
Deshaw, Walter R., 4,268,122, Cl. 350-307.000.

Keeley, Donald E., to General Electric Company. Organic materials having meta, para-isopropylidene diphenoxy units and method. 4,268,647, Cl. 525-474.000.

Keene Corporation: *See—*
Black, Charles H.; and Eskow, Cary N., 4,267,916, Cl. 194-102.000.

Keil, Joseph W., to Dow Corning Corporation. Antiperspirant emulsion compositions. 4,268,499, Cl. 424-68.000.

Keim, William A.; and Cook, James A., Jr., to PPG Industries, Inc. Process for preparing chlorothiolformates. 4,268,456, Cl. 260-455.00R.

Kekas, Dennis H.; McAdams, Ronald P.; and Polischuk-Sawtschenko, Alexander, to International Business Machines Corporation. Pivotally mounted printed circuit board holder. 4,268,100, Cl. 339-17.0LM.

Kell, Ralph W., to Goodyear Tire & Rubber Company, The. Anti-backbend belts. 4,267,921, Cl. 198-847.000.

Keller, Morris C.; and Rustin, Francis. Suspended watering system for poultry house. 4,267,800, Cl. 119-72.500.

Kellner, David: *See—*
Gedeon, Harvey; Joyce, James F.; and Kellner, David, 4,268,498, Cl. 424-59.000.

Kendall Company, The: *See—*
Harris, George M.; and Thomas, Samuel J., 4,268,334, Cl. 156-187.000.

Kennedy, Richard B., Sr. Ski accessory transportation and storage system. 4,268,050, Cl. 280-38.000.

Kenney, Robert T., II: *See—*
Harrow, James E.; and Kenney, Robert T., II, 4,268,196, Cl. 408-39.000.

Kent, Peter; Norris, Richard M.; and Charlton, Alan J., to Avco Corporation. Multichannel particle separator of the anti-icing type. 4,268,284, Cl. 55-269.000.

Kent, Raymond W., Jr., to Dow Chemical Company, The. Color styrene-acrylonitrile polymers. 4,268,652, Cl. 526-217.000.

Kepco, Inc.: *See—*
Nercessian, Sarkis, 4,268,790, Cl. 323-318.000.

Kerber, Hermann: *See—*
Bederke, Klaus; and Kerber, Hermann, 4,268,659, Cl. 528-288.000.

Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung: *See—*
Hemmerich, Johann, 4,267,707, Cl. 62-514.00R.

Kershner, Stuart D., to Olin Corporation. Four bar linkage fastener loader. 4,267,952, Cl. 227-9.000.

Khan, Farooq A., to NL Industries, Inc. Crane motion compensator. 4,268,013, Cl. 254-392.000.

Kidder, Kent A. Electrical connector. 4,268,104, Cl. 339-98.000.

Kido, Keishiro: *See—*
Ikeda, Tomoaki; Yoshida, Satoshi; Takeuchi, Hideaki; Shinozaki, Fumiaki; and Kido, Keishiro, 4,268,541, Cl. 427-177.000.

Kielhorn, Larry L. Stake for animal traps. 4,267,660, Cl. 43-96.000.

Kiellarson, Folke: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,267,937, Cl. 220-267.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,268,336, Cl. 156-244.130.

Kiencke, Uwe: *See—*
Espenschied, Helmut; Kiencke, Uwe; and Schulz, Alfred, 4,267,750, Cl. 74-866.000.

Kienholz, Charles M.; and Bennett, Clifford D., to C. R. Bard, Inc. Nebulizer device. 4,267,974, Cl. 239-74.000.

Kijima, Yoshihiko: *See—*
Imanaka, Hiroshi; and Kijima, Yoshihiko, 4,268,570, Cl. 428-216.000.

Kikuchi, Makoto: *See—*
Ga, Eiichi; Chino, Koichi; Kikuchi, Makoto; Oda, Akira; and Horiuchi, Susumu, 4,268,409, Cl. 252-301.10W.

Killian, Daniel L.; and Fraser, Peter E., to Automotive Products Limited. Fluid connections to rotary members. 4,268,044, Cl. 277-59.000.

Kimball International, Inc.: *See—*
Sullivan, Richard D.; and Knies, Allen E., 4,267,759, Cl. 83-665.000.

Kimihira, Yuichi: *See—*
Miki, Yusaku; Yamamoto, Hidemi; Kimihira, Yuichi; and Tanaka, Akio, 4,268,903, Cl. 364-200.000.

Kimura, Takeo: *See—*
Akiyama, Minoru; Akashi, Kageyasu; Shiga, Tetsuo; Ito, Yoshinobu; Kimura, Takeo; and Matsui, Takeki, 4,268,626, Cl. 430-620.000.

Kimura, Tamisuke; Kashiwara, Tomokazu; and Yamaguchi, Tetsuo, to Sumitomo Rubber Industries, Ltd. Elastically deformable fender. 4,267,792, Cl. 114-219.000.

Kimura, Teruo: *See—*
Nakayama, Muneo; Nishimura, Toshihiro; Hashimoto, Akira; Nakane, Hisashi; and Kimura, Teruo, 4,268,539, Cl. 427-108.000.

Kimura, Yoshio: *See—*
Kaneko, Dentaro; Onoda, Mamoru; Kimura, Yoshio; Inada, Yutaka; and Tomita, Masahiro, 4,268,303, Cl. 75-34.000.

Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Numeric data fetch - alignment of data including scale factor difference. 4,268,909, Cl. 364-200.000.

Kingsdown Medical Consultants Limited: *See—*
Steer, Peter L.; and Edwards, John V., 4,268,286, Cl. 55-278.000.

Kinoshita, Kunio: *See—*
Kokaji, Norio; Kinoshita, Kunio; Urano, Toshihiro; and Saitoh, Katsunori, 4,268,872, Cl. 358-301.000.

Kirmaier, Norbert L.: *See—*
Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, 4,268,367, Cl. 204-149.000.

Kishikawa, Shinobu: *See—*
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.

Kishimoto, Kazuo: *See—*
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,365, Cl. 204-98.000.
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,268,373, Cl. 204-252.000.
Iizima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,372, Cl. 204-252.000.

Kita, Yasuo; and Nishiyama, Yukinori, to Sumitomo Electric Industries, Ltd. Disk brake apparatus for motor vehicle. 4,267,903, Cl. 188-72.600.

Kitahara, Makoto: *See—*
Katagiri, Kazuharu; Ishikawa, Shozo; Ohta, Shigeto; and Kitahara, Makoto, 4,268,595, Cl. 430-48.000.

Kitajima, Masao: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,268,575, Cl. 428-336.000.

Kitamura, Takashi; Sakamaki, Hisashi; and Kawamura, Naoto, to Canon Kabushiki Kaisha. Recording apparatus for reading information from an original. 4,268,870, Cl. 358-296.000.

Kitatani, Katuzi: *See—*
Sera, Hidefumi; Kitatani, Katuzi; Ogawa, Masasi; Ishigaki, Kunio; and Shiraishi, Hisashi, 4,268,627, Cl. 430-623.000.

Kiuchi, Masayoshi: *See—*
Sugiura, Yoji; and Kiuchi, Masayoshi, 4,268,153, Cl. 354-234.000.

Kiyohara, Takehiko: *See—*
Uchiyama, Takashi; Tsunekawa, Tokuichi; and Kiyohara, Takehiko, 4,268,139, Cl. 354-34.000.

Klaus, Irving: *See—*
Sung, Pei; Klaus, Irving; and Lee-You, James, 4,268,308, Cl. 75-171.000.

Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., to Philip A. Hunt Chemical Corp. Method, apparatus and compositions for liquid development of electrostatic images. 4,268,597, Cl. 430-102.000.

Klein, Edgar: *See—*
Becker, Heinrich; Klein, Edgar; Rosendahl, Franz; and Weber, Helmut, 4,268,422, Cl. 252-461.000.

Klein, Joseph T.: *See—*
Effland, Richard C.; Davis, Larry; and Klein, Joseph T., 4,268,515, Cl. 424-267.000.

Klein, Raphael: *See—*
Toole, Monte M.; and Klein, Raphael, 4,268,538, Cl. 427-93.000.

Klingaman, Richard M.; and Ehrenreich, Leo C., to Penn Virginia Corporation. Pyroplastoid particles, composition and method of production. 4,268,320, Cl. 106-288.00B.

Kloke, Werner, to Gandy, Prem. Illuminated sign. 4,267,657, Cl. 40-549.000.

Klose, Sigmar; Batz, Hans-Georg; Stoltz, Michael; Hagen, Alexander; and Weimann, Gunter, to Boehringer Mannheim GmbH. Method for the determination of α-amylase. 4,268,628, Cl. 435-22.000.

Klotz, Marvin R., to Standard Oil Company (Indiana). Hydrocarbon-conversion catalyst and its method of preparation. 4,268,420, Cl. 252-432.000.

Kmonk, Stanley; Alder, John L.; and Racki, Francis R., to Westinghouse Electric Corp. Nuclear reactor fuel assembly grid. 4,268,356, Cl. 176-78.000.

Knabke, James J., to FMC Corporation. Synergistic insecticidal combinations comprising methomyl and 2-dihalovinyl-3,3-dimethylcyclopropanecarboxylates. 4,268,521, Cl. 424-298.000.

Knapp, Carl L.: *See*—
Schildkraut, Alan L.; Luca, Vincent A., Jr.; and Knapp, Carl L., 4,268,103, Cl. 339-89.00M.

Knapp, Robert F.: *See*—
Davis, Murray W.; Diedzic, Matthew J.; Knapp, Robert F.; and Whitney, Bruce F., 4,268,818, Cl. 340-870.380.

Knies, Allen E.: *See*—
Sullivan, Richard D.; and Knies, Allen E., 4,267,759, Cl. 83-665.000.

Knifton, John F., to Texaco Development Corp. Manufacture of vicinal glycol esters from synthesis gas. 4,268,689, Cl. 560-263.000.

Kobayashi, Masahiro: *See*—
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, 4,268,464, Cl. 264-22.000.

Kobayasi, Sohei, to Modern Machinery Company, Ltd.; and Small Business Promotion Corporation. Feeding mechanism of bag manufacturing machine. 4,268,260, Cl. 493-194.000.

Kobe, Inc.: *See*—
Erickson, John W., 4,268,281, Cl. 55-92.000.
Williams, Carter P., 4,267,964, Cl. 233-21.000.

Kobe Steel, Limited: *See*—
Kaneko, Dentaro; Onoda, Mamoru; Kimura, Yoshio; Inada, Yutaka; and Tomita, Masahiro, 4,268,303, Cl. 75-34.000.
Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Hara, Shozo; Tanaka, Toshikazu; and Taira, Akira, 4,268,219, Cl. 414-786.000.

Kobori, Toshio; and Miyamoto, Takayoshi, to Minolta Camera Kabushiki Kaisha. Viewfinder dioptry adjusting device for single-lens reflex cameras. 4,268,151, Cl. 354-219.000.

Kobori, Yasunori; Itoh, Toshi; Tokunaga, Yoichi; and Teshima, Tunehiko, to Hitachi, Ltd. Servo circuit for rotary heads of a video tape recorder. 4,268,873, Cl. 360-9.000.

Kocay, Witold R., to Monsanto Company. Fabric suitable for making sandbags and method for making the same. 4,267,864, Cl. 139-420.00R.

Koenig, Harvey S.; and Bryant, George M., to Union Carbide Corporation. Acrylic acid-acrylate copolymer thickening agents. 4,268,641, Cl. 525-367.000.

Kohler, Karl A.: *See*—
House, Richard F.; Kohler, Karl A.; and Lewis, Philip W., 4,267,956, Cl. 229-30.000.

Kohmann GmbH & Co., Firma: *See*—
Kohmann, Karl-Heinz; and Heiber, Wolfgang, 4,268,261, Cl. 493-231.000.

Kohmann, Karl-Heinz; and Heiber, Wolfgang, to Kohmann GmbH & Co., Firma. Machine for the production of packaging wrappers. 4,268,261, Cl. 493-231.000.

Koike, Norio; Hanamura, Shoji; and Kubo, Masaharu, to Hitachi, Ltd. Solid-state imaging device. 4,268,845, Cl. 357-30.000.

Koike, Susumu: *See*—
Uragaki, Tamotsu; Inoue, Morio; Koike, Susumu; and Iwasa, Hitoo, 4,268,327, Cl. 148-171.000.

Koike, Toshio: *See*—
Ebisawa, Kiyohito; Hisabayashi, Satoshi; Hashimoto, Kazuyuki; Kuromori, Mitsuo; and Koike, Toshio, 4,268,162, Cl. 355-14.00R.

Kojima, Kenji, to Kabushiki Kaisha Ricoh. Sheet supply means for a reproducing apparatus. 4,268,026, Cl. 271-121.000.

Kojima, Tetsurou: *See*—
Adachi, Keiichi; Kato, Eiichi; Inoue, Nobuaki; and Kojima, Tetsurou, 4,268,622, Cl. 430-513.000.

Kokaji, Norio; Kinoshita, Kunio; Urano, Toshihiro; and Saitoh, Katsunori, to Iwatsu Electric Co., Ltd. Magnetic duplicator with multiple copies. 4,268,872, Cl. 358-301.000.

Koks, Marinus F., to Hunter Douglas International N.V. Sliding clutch for venetian blind. 4,267,875, Cl. 160-176.00R.

Kokubo, Eiichi; and Miyagawa, Tuyoshi, to Laurel Bank Machine Co., Ltd. Bank note holding method for bank note counting machine. 4,268,024, Cl. 271-95.000.

Kolene Corp.: *See*—
Jakubowski, Thomas M.; and Wood, William G., 4,268,323, Cl. 148-15.500.

Kollmar, Friedrich: *See*—
Handte, Herbert; and Kollmar, Friedrich, 4,268,794, Cl. 328-185.000.

Kolze, Lawrence A., to Eaton Corporation. Control system for laundry appliance. 4,267,711, Cl. 68-12.00R.

Komabashiri, Takamichi: *See*—
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,365, Cl. 204-98.000.
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,268,373, Cl. 204-252.000.
Iizima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,372, Cl. 204-252.000.

Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; Oda, Ryoichi; and Takamizawa, Yuji, to Mitsubishi Gas Chemical Company, Inc. Process for producing terephthalic acid of high purity. 4,268,690, Cl. 562-416.000.

Komatsu, Tadaaki; Araki, Yuusuke; and Inoue, Kanji, to Bridgestone Tire Company Limited. Green tire building process and apparatus. 4,268,330, Cl. 156-111.000.

Komatsu, Takayoshi: *See*—
Ueyama, Tamotsu; Wada, Yukihiko; Homma, Masaji; Aisawa, Hitoshi; Komatsu, Takayoshi; Shibata, Tatsuhisa; and Kamiyama, Hiroharu, 4,268,614, Cl. 430-315.000.

Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH: *See*—
Oehler, Hermann, 4,267,755, Cl. 83-423.000.

Kommanditbolaget United Stirling AB & Co.: *See*—
Lindskoug, Per S., 4,267,696, Cl. 60-526.000.

Kommandittiyhtio Finnpipette Osmo A. Suovaniemi: *See*—
Suovaniemi, Osmo A.; and Tervamaki, Jukka, 4,268,481, Cl. 422-100.000.

Komori, Kenji: *See*—
Kawakami, Katsuhiko; Komori, Kenji; and Megumi, Hiroshi, 4,268,414, Cl. 252-412.000.

Kondo, Isao; and Nakajima, Yukio, to Olympus Optical Co., Ltd. Electrically-controlled shutter for automatic exposure camera. 4,268,140, Cl. 354-34.000.

Kondo, Kiyosi; Fujimoto, Tamotsu; Suda, Minoru; and Tunemoto, Daiei, to Sagami Chemical Research Center. Process for preparing aromatic acetic acid. 4,268,442, Cl. 260-326.200.

Kondo, Shinichi: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,268,664, Cl. 536-10.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ishihara, Haruji; Shimokawa, Ryushi; Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; and Aratame, Kazuhisa, 4,268,136, Cl. 354-23.00D.
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,268,620, Cl. 430-403.000.
Kamogawa, Nin-ichi; and Yamazaki, Yoshio, 4,267,796, Cl. 118-658.000.
Muramatsu, Toshio, 4,268,160, Cl. 355-3.00R.
Ogi, Keiji; Sasaki, Takashi; Okaniwa, Kenichiro; and Tosaka, Yasuo, 4,268,621, Cl. 430-409.000.
Yajima, Tatsuo; and Nakamura, Hiroya, 4,268,164, Cl. 355-41.000.

Konno, Yutaka; and Kawamura, Shigeo, to Yamanouchi Pharmaceutical Co., Ltd. Suppositories containing a compound having bronchodilator activity. 4,268,501, Cl. 424-80.000.

Kontos, Stavros B., to Critikon, Inc. Controlled volume blood sampling syringe. 4,267,846, Cl. 128-765.000.

Koritsu Machine Industrial Limited: *See*—
Tsuzuki, Akira; and Tobitani, Hiroshi, 4,268,360, Cl. 202-270.000.

Korterod, Lars; Strand, Arne; Ellingsen, Odd; and Broen, Harry, to Tubefabrikken A/S. Lid arrangement for a ski wax can with a tear-off casing. 4,267,929, Cl. 206-603.000.

Korth, Otto H.: *See*—
Toppins, Charles R.; Williams, Cecil L.; and Korth, Otto H., 4,268,053, Cl. 280-154.000.

Kosaka, Masaki: *See*—
Suzuki, Hajime; Masuda, Ikuo; and Kosaka, Masaki, 4,268,579, Cl. 428-413.000.

Koshimaru, Shigeru: *See*—
Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, 4,268,847, Cl. 357-52.000.

Koshkin, Lev N.; Semenov, Valery M.; Repin, Jury A.; Pozdnyakov, Anatoly M.; and Lutskov, Nikolai Z. Machine for moulding articles from thermoplastic polymeric materials. 4,268,243, Cl. 425-575.000.

Kostiner, Edward. Washing apparatus for photographic materials. 4,268,156, Cl. 354-324.000.

Kotzschke, Gunter: *See*—
Serbent, Harry; Rosenstock, Friedrich; and Kotzschke, Gunter, 4,268,304, Cl. 75-36.000.

Koumura, Noboru: *See*—
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; and Sato, Yasushi, 4,268,841, Cl. 346-138.000.

Kourimsky, Josef A.; and Nix, Lothar H. W., to AMP Incorporated. Electrical switch. 4,268,731, Cl. 200-67.0AA.

Kovtun, Jury L.: *See*—
Srapeniants, Rigo A.; Saveliev, Igor B.; Kovtun, Jury L.; Sidorov, Alexandr V.; Tsagolov, Kim S.; and Miroshnikova, Nadezhda N., 4,268,754, Cl. 250-391.000.

Koziol, Walter. Universal burner element for a gas barbecue grill. 4,267,816, Cl. 126-41.00R.

Kraftwerk Union Aktiengesellschaft: *See*—
Weber, Robert; Ring, Stefan; and Heeschen, Ulf, 4,268,755, Cl. 250-506.000.

Krause, Peter: *See*—
Krause, Ulrich; and Krause, Peter, 4,268,187, Cl. 404-118.000.

Krause, Ulrich; and Krause, Peter. Drag-type spreading apparatus for road construction mixtures. 4,268,187, Cl. 404-118.000.

Krebs, Peter: *See*—
Mogensen, Vagn; Jorgensen, Villy E.; and Krebs, Peter, 4,267,878, Cl. 164-187.000.

Kretchman, Gerald L.; and Weir, Robert M., to Whirlpool Corporation. Retaining clip for removable cabinet for front-serviceable appliances. 4,268,098, Cl. 312-210.000.

Kronos Titan G.m.b.H.: *See*—
Becker, Heinrich; Klein, Edgar; Rosendahl, Franz; and Weber, Helmut, 4,268,422, Cl. 252-461.000.

Kropp, Rudolf; Thoemel, Frank; Nuerrenbach, Axel; Hoffman, Werner; Wenisch, Franz; and Fuchs, Hartwig, to BASF Aktiengesell-

schaft. Preparation of bicyclic enol-ethers, and novel ethers of 2-(3-hydroxyprop-1-yl)-cycloalkanones. 4,268,445, Cl. 260-345.200.

Kruckenberg, Winfried, to Bayer Aktiengesellschaft. Basic azo dyestuffs having benzylammoniumamine substituent in the coupling component. 4,268,439, Cl. 260-205.000.

Kruger, Dietrich: *See*—
Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, 4,268,367, Cl. 204-149.000.

Krusche, Georg: *See*—
Kurze, Joachim; Fikentscher, Rolf; and Krusche, Georg, 4,268,402, Cl. 252-8.800.

Krutak, James J., Sr.: *See*—
Haase, Jan R.; Landholm, Richard A.; and Krutak, James J., Sr., 4,268,606, Cl. 430-223.000.

Kubo, Masaharu: *See*—
Koike, Norio; Hanamura, Shoji; and Kubo, Masaharu, 4,268,845, Cl. 357-30.000.

Kubota, Ltd.: *See*—
Miyata, Junji; and Kurohara, Kazuaki, 4,268,056, Cl. 280-456.00A.
Teraoka, Akira; and Nakada, Mitsugu, 4,268,048, Cl. 280-5.00A.

Kubota, Yoshitaka: *See*—
Mine, Katsutoshi; Kubota, Yoshitaka; and Maruyama, Tsuneo, 4,268,452, Cl. 260-37.0SB.

Kubota, Yukio: *See*—
Morio, Minoru; Kambara, Masahiro; Kubota, Yukio; and Yamashita, Keitaro, 4,268,875, Cl. 360-10.000.

Kuehnhanss, Gerhard O., to Ethyl Corporation. Method for the preparation of furan-2-carboxylic acid amide and the corresponding furan-2-carboxylic acid. 4,268,449, Cl. 260-347.300.

Kuenemund, Friedrich: *See*—
Betzl, Hermann; and Kuenemund, Friedrich, 4,268,806, Cl. 333-165.000.

Kuhn, Lawrence: *See*—
Aviram, Ari; Pennington, Keith S.; and Kuhn, Lawrence, 4,268,368, Cl. 204-181.00C.

Kumagai, Hiroji: *See*—
Naganuma, Tsutomu; Hoshi, Hisao; Kumagai, Hiroji; and Yoshida, Kaneki, 4,268,158, Cl. 355-3.00R.

Kunkel, Heinrich: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Kunkel, Heinrich; Halliger, Leonard; Stolz, Robert; and Schurger, Rainer, 4,267,920, Cl. 198-842.000.

Kunz, Bernard L.; and Hargraves, David P., to Emerson Electric Co. Modulating diaphragm valve. 4,268,006, Cl. 251-11.000.

Kuo, Mau-Jung: *See*—
Tolbert, William R.; Kuo, Mau-Jung; and Feder, Joseph, 4,268,629, Cl. 435-41.000.

Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, to Nippon Electric Co., Ltd. Semiconductor device having an insulated gate type field effect transistor and method for producing the same. 4,268,847, Cl. 357-52.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Iizuka, Yo; Yusa, Haruhiko; Midorikawa, Susumu, deceased; and Midorikawa, Taeko, heir, 4,268,636, Cl. 525-85.000.
Yoshikumi, Chikao; Omura, Yoshio; and Hotta, Tetsuya, 4,268,505, Cl. 424-180.000.

Kurhajec, George A.: *See*—
Leseman, Ronald P.; and Kurhajec, George A., 4,268,598, Cl. 430-107.000.

Kurohara, Kazuaki: *See*—
Miyata, Junji; and Kurohara, Kazuaki, 4,268,056, Cl. 280-456.00A.

Kuromori, Mitsuo: *See*—
Ebisawa, Kiyohito; Hisabayashi, Satoshi; Hashimoto, Kazuyuki; Kuromori, Mitsuo; and Koike, Toshio, 4,268,162, Cl. 355-14.00R.

Kurze, Joachim; Fikentscher, Rolf; and Krusche, Georg, to BASF Aktiengesellschaft. Liquefaction of aqueous textile softeners. 4,268,402, Cl. 252-8.800.

Kusakabe, Hiromi, to Tokyo Shibaura Denki Kabushiki Kaisha. Frequency converting circuit. 4,268,916, Cl. 455-333.000.

Kusters, Eduard: *See*—
Gruber, Heinz, 4,267,712, Cl. 68-205.00R.

Kuth, Robert: *See*—
Hendricks, Udo-Winfried; Hildebrand, Dietrich; and Kuth, Robert, 4,268,266, Cl. 8-543.000.

KW Research and Development: *See*—
Wheeler, Alton D., 4,268,144, Cl. 354-108.000.

Kwanyuen, Prachuab: *See*—
Wildman, Samuel G.; and Kwanyuen, Prachuab, 4,268,632, Cl. 435-232.000.

Kwok, Clyde C. K.; and Suchy, Leszek, to Rippingille, Edward V., Jr. Fluid oscillator. 4,267,856, Cl. 137-119.000.

L. & C. Steinmuller GmbH: *See*—
Schuster, Ernst, 4,268,358, Cl. 201-9.000.

L. M. Dearing Associates, Inc.: *See*—
Dearing, Le Roy M.; and Wiegand, Edgar D., 4,268,143, Cl. 354-106.000.

LaBow, Jean A.: *See*—
Farrell, Eugene A.; and LaBow, Jean A., 4,268,058, Cl. 280-481.000.

Lace, Melvin A. Magnetic probe. 4,268,771, Cl. 310-155.000.

Lamb, Billy L.: *See*—
Cribbs, Robert W.; Lamb, Billy L.; and DeLacy, Thomas J., 4,268,828, Cl. 343-5.00W.

Lambelin, Georges E.: *See*—
Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.

Lambert, Charles E.: *See*—
Williams, Richard A.; Eydt, Andre J.; Lambert, Charles E.; McGuire, Michael T.; Schulok, Walter W.; and Waitman, Reuben H., 4,268,533, Cl. 426-577.000.

La Mountain, Thomas D.: *See*—
Schierwagen, Alfred W.; and La Mountain, Thomas D., 4,268,897, Cl. 362-325.000.

Landa, Benzion, to Savin Corporation. Anti-bounce projectile collecting surface for microballistic printer. 4,268,178, Cl. 400-118.000.

Landholm, Richard A.: *See*—
Haase, Jan R.; Landholm, Richard A.; and Krutak, James J., Sr., 4,268,606, Cl. 430-223.000.

Lane, Michael D.; and Von Forell, Kenneth J., Sr., to Lane, Michael D. Velocity meter for baseball bat. 4,267,793, Cl. 116-324.000.

Langanke, Rolf, to Stabilus GmbH. Electrically conductive, telescoping spring. 4,268,018, Cl. 267-120.000.

Lange, Erhard; and Hausen, Manfred Z., to Chemische Werke Huls Aktiengesellschaft. Process for the continuous preparation of butane-1,4-diol. 4,268,695, Cl. 568-864.000.

Langer, Arthur W., Jr.; and Whitney, Thomas A., to Exxon Research & Engineering Co. Chelating tertiary amino metal amides. 4,268,455, Cl. 260-448.00R.

Langlitz, Karlheinz; and Schmitz, Gunter, to Mannesmann Demag AG. Transport lift truck for metallurgical vessels, particularly steel mill converters. 4,268,014, Cl. 266-165.000.

Lanni, Michael J.: *See*—
O'Connor, Bernard J.; Ficken, William H.; Carnevale, Tony R.; and Lanni, Michael J., 4,267,737, Cl. 74-5.470.

Lanzerath, Gunther: *See*—
Bauer, Walter; Fabricius, Emilio; Lanzerath, Gunther; Patzer, Helmut; and Vogele, Richard, 4,267,912, Cl. 192-53.00F.

LaPoint, Albert E., to Cal West Metals. Separator. 4,267,980, Cl. 241-20.000.

Lark, John C., to Standard Oil Company (Indiana). Polyester resin composition. 4,268,645, Cl. 525-437.000.

Larsson, Hans-Gunnar; and Westman, Erik, to ASEA Aktiebolag. Method and machine for filling a capsule with powder. 4,267,866, Cl. 141-1.000.

Laser Products Corporation: *See*—
McCrickerd, John T., 4,268,799, Cl. 331-94.50C.

Laskin, Allen I.: *See*—
Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., 4,268,630, Cl. 435-148.000.

Laufe, Leonard E.; and Wheeler, Robert G., to Repromed, Inc. Surgical instrument for use in reversible sterilization or permanent occlusion procedures. 4,267,839, Cl. 128-303.00A.

Laughlin, Sidney J.; and Claypool, Ralph J. Method and apparatus for producing fiber product. 4,268,294, Cl. 65-10.000.

Laurel Bank Machine Co., Ltd.: *See*—
Kokubo, Eiichi; and Miyagawa, Tuyoshi, 4,268,024, Cl. 271-95.000.

Laurent, John A.: *See*—
Brown, Dale M.; Garfinkel, Marvin; and Laurent, John A., 4,268,843, Cl. 357-19.000.

Lavanish, Jerome M., to PPG Industries, Inc. 3-[5-[1-(Dihalophenoxy-)alkyl, alkynyl, alkenyl, or haloalkyl]-1,3,4-thiadiazol-2-yl]-4-hydroxy-1-methyl-2-imidazolidinones. 4,268,675, Cl. 548-137.000.

Lavanish, Jerome M., to PPG Industries, Inc. 3-[5- or 3-Substituted-5- or 3-isoxazolyl]-1-allyl or alkyl-4-substituted-5-substituted or unsubstituted-2-imidazolidinones. 4,268,679, Cl. 548-247.000.

Lazar, Lawrence S.; and Wittemann, Robert F., to Johnson & Johnson. Electrosurgical grounding pad. 4,267,840, Cl. 128-303.130.

Lazarek, Gerald M.; and Staub, Fred W., to Electric Power Research Institute. Forced vaporization heat sink for semiconductor devices. 4,268,850, Cl. 357-82.000.

Leaf Proteins, Inc.: *See*—
Wildman, Samuel G.; and Kwanyuen, Prachuab, 4,268,632, Cl. 435-232.000.

Lear Siegler, Inc.: *See*—
Chekirda, Russell F.; Murphy, Randall T.; and Lyszczarz, Walter, 4,267,999, Cl. 248-418.000.

Lecerf, Andre; and Broussely, Michel, to Gipelec. Solid positive active material for high specific energy electric cells. 4,268,588, Cl. 429-194.000.

Leclerc, Jacques; Cormet, Rene; and Marcus, Guy, to Union Siderurgique du Nord et de l'est de la France. Process for treating liquid steel intended in particular for manufacturing machine wire. 4,268,305, Cl. 75-48.000.

Lee, Chi-Long: *See*—
Homan, Gary R.; and Lee, Chi-Long, 4,268,655, Cl. 528-15.000.

Lee, George A., to Dow Chemical Company, The. Preparation of substituted oxatriazoles. 4,268,674, Cl. 548-125.000.

Lee-You, James: *See*—
Sung, Pei; Klaus, Irving; and Lee-You, James, 4,268,308, Cl. 75-171.000.

Lee, Yu C.: *See*—
Scott, Lawrence M.; Wolf, Irving W.; and Lee, Yu C., 4,268,540, Cl. 427-127.000.

Lehner, John R.: *See*—
Powell, James; Hsieh, Shih-Yung; and Lehner, John R., 4,268,353, Cl. 176-3.000.

Lehnert, Gunther; and Schiffer, Rainer, to Bayer Aktiengesellschaft. Photographic apparatus for plate thermography. 4,268,155, Cl. 354-293.000.

Lehto, Eino M., to Bell & Howell Company. Image focusing apparatus. 4,268,135, Cl. 353-27.00R.

Leipold, Harold D.: *See—*
Ford, John R., Jr.; and Leipold, Harold D., 4,268,884, Cl. 361-22.000.

Leiponen, Matti O.; and Tonteri, Ossi T., to Outokumpu Oy. Apparatus for the continuous casting of an object of predetermined weight or size. 4,267,877, Cl. 164-155.000.

Lenz, Arnold: *See—*
Deneke, Klaus; and Lenz, Arnold, 4,268,485, Cl. 423-3.000.

Leonard, Gary S.; and Zinsmeyer, Thomas M., to Carrier Corporation. Refrigeration purging system. 4,267,705, Cl. 62-195.000.

Leoni, Roberto: *See—*
Baldini, Alberto; Leoni, Roberto; Calloni, Angelo; and Angelini, Gianfranco, 4,268,666, Cl. 536-57.000.

Leppard, David G.; and Rasberger, Michael, to Ciba-Geigy AG. Recording material for color photography. 4,268,593, Cl. 430-17.000.

Lepselter, Martin P., to Bell Telephone Laboratories, Incorporated. High capacity sputter-etching apparatus. 4,268,374, Cl. 204-298.000.

Leseman, Ronald P.; and Kurhajec, George A., to Minnesota Mining and Manufacturing Company. Developing powder composition containing fluoroaliphatic sulfonamido surface active agent. 4,268,598, Cl. 430-107.000.

Leu, Erwin, to Maschinenfabrik Schweiter AG. Thread draw-off apparatus. 4,267,983, Cl. 242-35.60E.

Leupold, Hermann: *See—*
Eschner, Axel; Leupold, Hermann; and Jeschke, Peter, 4,268,016, Cl. 266-236.000.

Levecque, Marc, administrator: *See—*
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,268,293, Cl. 65-5.000.

Levecque, Marcel, deceased; by Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, to Saint-Gobain Industries. Stabilization of glass feed in fiberization by toration. 4,268,293, Cl. 65-5.000.

Lever Brothers Company: *See—*
Hall, Norman; Martin, Alexander; and Tomlinson, Alan D., 4,268,424, Cl. 252-546.000.

Leversidge, Paul L.: *See—*
Allan, John J.; Foster, Richard G.; and Leversidge, Paul L., 4,268,410, Cl. 252-312.000.

Lewis, David W. Cargo carrier. 4,267,948, Cl. 224-42.340.

Lewis, Oliver G., to Exxon Research & Engineering Co. Pressure relief valve. 4,267,858, Cl. 137-529.000.

Lewis, Philip W.: *See—*
House, Richard F.; Kohler, Karl A.; and Lewis, Philip W., 4,267,956, Cl. 229-30.000.

Liautaud, James P. Mold core and method and apparatus for manufacture. 4,268,003, Cl. 249-142.000.

Libbey-Owens-Ford Company: *See—*
Hodulik, Joseph W., 4,268,545, Cl. 427-282.000.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Daur, Rolf; Hoffmann, Herbert; and Schmid, Gunter, 4,268,585, Cl. 428-622.000.

Liedtke, Kurt: *See—*
Focke, Heinz; and Liedtke, Kurt, 4,267,958, Cl. 229-44.0CB.

Lind, Frederick D.: *See—*
Shuck, William D.; Lind, Frederick D.; and Cole, John W., 4,268,398, Cl. 210-758.000.

Lind, Keith D.; and Galloway, Deane E., to American Can Company. Bag for vacuum packaging of meats or similar products. 4,267,960, Cl. 229-55.000.

Lindley, William L. Manual tool for feeding refuse to a garbage grinder disposal. 4,268,080, Cl. 294-1.00R.

Lindskoug, Per S., to Kommanditbolaget United Stirling AB & Co. Hot gas engine. 4,267,696, Cl. 60-526.000.

Ling, Nan-Sing: *See—*
Persidsky, Maxim D.; and Ling, Nan-Sing, 4,268,393, Cl. 210-516.000.

Lippa, Giuseppe, to American Standard Inc. Mold for casting ceramic materials. 4,268,001, Cl. 249-58.000.

Little, Richard I.; Lubin, Barry D.; and Spear, Stephen L., to Motorola, Inc. Radiotelephone communications system. 4,268,722, Cl. 179-2.0EB.

Logue, Joseph C.; and Wu, Wei-Wha, to International Business Machines Corporation. Modular macroprocessing system comprising a microprocessor and an extendable number of programmed logic arrays. 4,268,908, Cl. 364-200.000.

Lomax, George F., to Howe-Baker Engineers, Inc. Dual-phase atomizer. 4,267,979, Cl. 239-419.000.

Lombardino, Joseph G.; Otterness, Ivan G.; and Muren, James F., to Pfizer Inc. [1]Benzothiopyrano[4,3-c]pyrazoles as immunoregulatory agents. 4,268,516, Cl. 424-273.00P.

Long, George R.; and Smayling, Michael C., to Du Pont de Nemours, E. I., and Company. Method and system for reproducing identification characters. 4,268,179, Cl. 400-120.000.

Longenecker, Ned; Becker, Clair M.; Riegel, David P.; and Vogt, Alan G., Jr., to Timeter Instrument Corp. Respiratory analyzer. 4,267,721, Cl. 73-1.00G.

Looney, John H., to Xerox Corporation. Conforming document aligner. 4,268,022, Cl. 271-7.000.

Lorain Products Corporation: *See—*
Brown, Harold J., 4,268,898, Cl. 363-20.000.

L'Oreal: *See—*
Grollier, Jean F.; Bugaut, Andree; Andrillon, Patrick; and Fourcadier, Chantal, 4,268,264, Cl. 8-410.000.

Los, Lindert, to Hollandse Signaalapparaten B.V. Threshold selection circuit. 4,268,863, Cl. 358-160.000.

Loudin, Philip B., to Illinois Tool Works Inc. Breather cap. 4,267,941, Cl. 220-85.0SP.

Lowe Alpine Systems, Inc.: *See—*
Lowe, Michael R., 4,267,868, Cl. 150-11.000.

Lowe Engineering Company: *See—*
Lowe, John G., 4,268,396, Cl. 210-670.000.

Lowe, John G., to Lowe Engineering Company. Oil recovery apparatus and method. 4,268,396, Cl. 210-670.000.

Lowe, Michael R., to Lowe Alpine Systems, Inc. Compressible stuff sack. 4,267,868, Cl. 150-11.000.

Lubbers, Marius H., to Everts & Van der Weyden Exploitatiemaatschappij Ewem/N.V. Holder for a guiding structure. 4,267,970, Cl. 238-310.000.

Lubin, Barry D.: *See—*
Little, Richard I.; Lubin, Barry D.; and Spear, Stephen L., 4,268,722, Cl. 179-2.0EB.

Luca, Vincent A., Jr.: *See—*
Schildkraut, Alan L.; Luca, Vincent A., Jr.; and Knapp, Carl L., 4,268,103, Cl. 339-89.00M.

Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., to Milchem Incorporated. Aqueous drilling fluid additive, composition and process. 4,268,400, Cl. 252-8.50C.

Luce, Ross G.: *See—*
Boiarski, Anthony A.; and Luce, Ross G., 4,268,460, Cl. 261-1.000.

Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., to Masonite Corporation. Post-press molding of man-made boards to produce contoured furniture parts. 4,268,565, Cl. 428-161.000.

Ludlow Corporation: *See—*
Whiting, Philip C., Jr., 4,268,531, Cl. 426-126.000.

Lueth, Roy C.: *See—*
Hale, Thomas E.; and Lueth, Roy C., 4,268,582, Cl. 428-446.000.

Luhrsen, Ernst; Sussmuth, Godehard; and Walden, Klaus, to Didier-Werke AG; and Hamburger Stahlwerke GmbH. Bottom outlet or discharge for use in metallurgical vessels for steel melts, particularly tundishes. 4,268,015, Cl. 266-236.000.

Lui, Kenneth, to TRW Inc. Optical reflector having a nickel-iron alloy reflecting surface. 4,268,124, Cl. 350-310.000.

Lukevics, Al: *See—*
Sheck, Wah; and Lukevics, Al, 4,268,184, Cl. 401-218.000.

Lumalampan AB: *See—*
Bjorkman, Karl-Ake G., 4,268,306, Cl. 75-81.000.

Lundquist, Jerry R.: *See—*
Barlow, Malcolm; and Lundquist, Jerry R., 4,268,369, Cl. 204-192.00D.

Lustig, Leopold P. Contra-angle head for dentistry. 4,268,252, Cl. 433-128.000.

Lutskov, Nikolai Z.: *See—*
Koshkin, Lev N.; Semenov, Valery M.; Repin, Jury A.; Pozdnyakov, Anatoly M.; and Lutskov, Nikolai Z., 4,268,243, Cl. 425-575.000.

Lynch, Paul C.; and Driver, Ervin M. Pipe supporting apparatus. 4,267,994, Cl. 248-65.000.

Lyszczarz, Walter: *See—*
Chekirda, Russell F.; Murphy, Randall T.; and Lyszczarz, Walter, 4,267,999, Cl. 248-418.000.

Maag Gearwheel & Machine Company Ltd.: *See—*
Haupt, Fritz, 4,268,232, Cl. 418-135.000.

Mac Valves, Inc.: *See—*
Neff, James A.; Fagerlie, Richard A.; and Bowman, Walter J., 4,267,862, Cl. 137-625.640.

Macchine Tessili Circolari MATEC S.p.A.: *See—*
Chietti, Giovanni, 4,267,708, Cl. 66-56.000.

MacDonald, Gene W., to GMSG, Inc. Bowling ball. 4,268,034, Cl. 273-63.00C.

Mackal, Glenn H. Automatic inflator. 4,267,944, Cl. 222-5.000.

MacKenzie, Harold L., to Riverwood Enterprises & Manufacturing, Ltd. Work bench with self-contained air cleaner. 4,268,282, Cl. 55-101.000.

Madruga, Luis: *See—*
Bourke, Donall G.; Mendelson, Richard N.; and Madruga, Luis, 4,268,906, Cl. 364-200.000.

Maeda, Akio; Hashimoto, Kinro; Inagami, Masaaki; and Fukushima, Hiroshi, to Nippon Zeon Co. Ltd. Vulcanizable rubber composition. 4,268,644, Cl. 525-403.000.

Maeda Industries, Ltd.: *See—*
Yamasaki, Kazuto, 4,267,744, Cl. 74-475.000.

Maeda, Sajiro: *See—*
Oshima, Nobuo; and Maeda, Sajiro, 4,268,127, Cl. 350-337.000.

Maeda, Syuichi: *See—*
Imahori, Seiichi; Murata, Yukichi; Maeda, Syuichi; and Suzuki, Sumio, 4,268,671, Cl. 544-245.000.

Magill, Barrie J.: *See—*
Harris, John F.; and Magill, Barrie J., 4,268,694, Cl. 568-763.000.

Magnavox Government and Industrial Electronics Co.: *See—*
Congdon, John C., 4,268,912, Cl. 367-163.000.

Maguire, Edward J., Jr.: *See—*
Flautt, Thomas J., Jr.; Maguire, Edward J., Jr.; and Richardson, David L., 4,268,738, Cl. 219-10.55F.

Maillot, Philippe: *See*—
d'Auria, Luigi; and Maillot, Philippe, 4,268,114, Cl. 350-96.200.

Maistre, Michel, to Societe Europeenne de Propulsion. Three-dimensional structure having a preferential direction. 4,268,560, Cl. 428-105.000.

Maitland, Roy, to Count Numbering Machine, Inc. Ink supply cartridge. 4,267,772, Cl. 101-103.000.

Majewicz, Wlodzimierz I.: *See*—
Tsang, David L.; and Majewicz, Wlodzimierz I., 4,268,234, Cl. 425-32.000.

Majima, Osamu, to Sony Corporation. Magnetic head assembly. 4,268,880, Cl. 360-109.000.

Makimoto, Mitsuo; and Yamashita, Sadahiko, to Matsushita Electric Industrial Co., Ltd. Microwave filter having means for capacitive interstage coupling between transmission lines. 4,268,809, Cl. 333-202.000.

Maliarik, Mary: *See*—
Rohrbach, Ronald P.; and Maliarik, Mary, 4,268,423, Cl. 252-430.000.

Mallory, Henry R.: *See*—
Bartunek, William; and Mallory, Henry R., 4,268,894, Cl. 362-158.000.

Malott, Richard C., to General Motors Corporation. Thrust balancing. 4,268,220, Cl. 415-104.000.

Manger, Josef W. Loudspeaker arrangements. 4,268,719, Cl. 179-1.00E.

Manke, Steven A.: *See*—
Noack, Manfred G.; and Manke, Steven A., 4,268,486, Cl. 423-55.000.

Manley, Michael T.; and Solomon, Edward G. Apparatus for analyzing the forces acting on a human foot. 4,267,728, Cl. 73-172.000.

Mann, Ray R. Lampshade means. 4,268,896, Cl. 362-311.000.

Mannesmann Aktiengesellschaft: *See*—
Huber, Walter; and Stratenhoff, Wolfgang, 4,268,203, Cl. 414-100.000.

Mannesmann Demag AG: *See*—
Langlitz, Karlheinz; and Schmitz, Gunter, 4,268,014, Cl. 266-165.000.

Mannon, Alfred T., Jr., to Union Oil Company of California. Dual-rotating eccentric drilling apparatus and method. 4,267,893, Cl. 175-65.000.

Mansson, Inge G., to EKA Aktiebolag. Method of treating pulp bleaching effluents. 4,268,350, Cl. 162-29.000.

Mansson, Siwer: *See*—
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,267,937, Cl. 220-267.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,268,336, Cl. 156-244.130.

Manteufel, Rolf P. C. Liquid distribution device in liquid-vapor contact apparatus. 4,267,978, Cl. 239-193.000.

Manzara, Anthony P., to Minnesota Mining and Manufacturing Company. Friction element containing phenol-formaldehyde-alkylphenol binder. 4,268,657, Cl. 528-155.000.

Marc, Michel, to Clint, Inc. Flow molding. 4,268,238, Cl. 425-174.80E.

Marchaj, Tadeusz J., to Preload Technology, Inc. Earthquake resisting tank and methods of constructing same. 4,267,676, Cl. 52-167.000.

Marcus, Guy: *See*—
Leclerc, Jacques; Cormet, Rene; and Marcus, Guy, 4,268,305, Cl. 75-48.000.

Marets, Maurice, to Trailigaz, Compagnie Generale de l'Ozone. Device for measuring a physical operating characteristic of an ozonizer. 4,268,480, Cl. 422-98.000.

Mark, Victor, to General Electric Company. Process for preparing polycarbonates using iminoethers as catalysts. 4,268,658, Cl. 528-199.000.

Mars, Inc.: *See*—
McLaughlin, Donald L.; and Beshenich, Paul J., 4,267,915, Cl. 194-1.00N.

Marshall, Claude J., Jr., to Rockwell International Corporation. Wheel trim assembly. 4,268,091, Cl. 301-37.00R.

Martija, Henry M.: *See*—
Grant, Frederic F.; and Martija, Henry M., 4,267,951, Cl. 226-195.000.

Martikainen, Kaarlo, to Oy Wartsila Ab. Disc cylinder lock. 4,267,717, Cl. 70-366.000.

Martin, Alexander: *See*—
Hall, Norman; Martin, Alexander; and Tomlinson, Alan D., 4,268,424, Cl. 252-546.000.

Martin, David J.: *See*—
Scott, Harold A.; and Martin, David J., 4,268,826, Cl. 340-707.000.

Martin, Dean W., to Caterpillar Tractor Co. Fixture and method for repairing track links. 4,268,019, Cl. 269-43.000.

Martin, Joe O., to Eli Lilly and Company. Cosmetic tonic formulation. 4,268,502, Cl. 424-83.000.

Martin, John K., III: *See*—
Whitney, Douglass G.; and Martin, John K., III, 4,267,836, Cl. 128-215.000.

Martin Marietta Corporation: *See*—
Wills, Milton H., Jr., 4,268,316, Cl. 106-97.000.

Martin, Merrill D. Automatic sheet handling apparatus. 4,268,028, Cl. 271-201.000.

Martin & Pagenstecher GmbH: *See*—
Hoffken, Erich; and Beckers, Karl-Dieter, 4,268,543, Cl. 427-230.000.

Martin, Thomas W.; Sandhu, Mohammad A.; and Savage, Dennis J., to Eastman Kodak Company. Photocrosslinkable, high-temperature-resistant polymers and their use in color imaging devices. 4,267,961, Cl. 250-226.000.

Maruyama, Tsuneo: *See*—
Mine, Katsutoshi; Kubota, Yoshitaka; and Maruyama, Tsuneo, 4,268,452, Cl. 260-37.0SB.

Marvin Glass & Associates: *See*—
Hanson, Stephen P., 4,267,661, Cl. 46-1.00K.

Maryland Cup Corporation: *See*—
Herbst, David H., 4,268,335, Cl. 156-218.000.

Marzouki, Taieb; and Schweisser, Bernd, to USM Corporation. Method for double glazing units. 4,268,553, Cl. 428-34.000.

Masak, Raymond J.: *See*—
Baurle, Herbert F.; and Masak, Raymond J., 4,268,829, Cl. 343-100.0LE.

Maschinenfabrik Schweiter AG: *See*—
Leu, Erwin, 4,267,983, Cl. 242-35.60E.

Mase, Yasushi; and Okamura, Toshikazu, to Nissan Motor Company, Limited. Exhaust gas recirculation control system. 4,267,809, Cl. 123-409.000.

Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. Daunomycin derivatives, their aglycones and the use thereof. 4,268,451, Cl. 260-376.000.

Maslen, John; and Nield, Eric, to Imperial Chemical Industries Limited. Polyamide compositions. 4,268,432, Cl. 260-45.75B.

Mason, Donald G., to Mason Engineering & Designing Corporation. Air freshening apparatus. 4,268,285, Cl. 55-271.000.

Mason Engineering & Designing Corporation: *See*—
Mason, Donald G., 4,268,285, Cl. 55-271.000.

Mason, Gene C. Combined duplicator and preformer for lapidary use. 4,267,670, Cl. 51-101.00R.

Masonite Corporation: *See*—
Luck, Allan J.; Clarke, John T.; and Hoffman, Michael R., 4,268,565, Cl. 428-161.000.

Massachusetts Institute of Technology: *See*—
Melngailis, John, 4,268,808, Cl. 333-195.000.
Millner, Alan R., 4,268,095, Cl. 308-10.000.
Schreiber, William F.; and Troxel, Donald E., 4,268,861, Cl. 358-138.000.
Suh, Nam P.; and Erwin, Lewis, II, 4,268,465, Cl. 264-25.000.

Masson Scott Thrissell Engineering: *See*—
Byrt, Graham A. B.; and Chandler, Kenneth, 4,267,752, Cl. 83-74.000.

Masuda, Ikuo: *See*—
Suzuki, Hajime; Masuda, Ikuo; and Kosaka, Masaki, 4,268,579, Cl. 428-413.000.

Matagne, Daniel M.: *See*—
Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.

Matoba, Yasuo, to Osaka Soda Co. Ltd. Curable composition of halogen-containing polymer. 4,268,640, Cl. 525-346.000.

Matsubara, Masaki: *See*—
Uetake, Toshifumi; and Matsubara, Masaki, 4,268,128, Cl. 350-410.000.

Matsuda, Tetsuo: *See*—
Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Watanabe, Toshiyuki; Watanabe, Susumu; and Matsuda, Tetsuo, 4,268,665, Cl. 536-17.00R.

Matsui, Takeki: *See*—
Akiyama, Minoru; Akashi, Kageyasu; Shiga, Tetsuo; Ito, Yoshinobu; Kimura, Takeo; and Matsui, Takeki, 4,268,626, Cl. 430-620.000.

Matsui, Takeshi: *See*—
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.

Matsumoto, Fuyuhiko: *See*—
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Matsumoto Yushi-Seiyaku Co., Ltd.: *See*—
Yonezawa, Yoshimichi, 4,268,615, Cl. 430-320.000.

Matsuno, Yoshio: *See*—
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Matsuo, Kazumasa, to Olympus Optical Co., Ltd. Endoscope having an extension guide for observation. 4,267,828, Cl. 128-6.000.

Matsuo, Syunji: *See*—
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Matsuo, Takaharu; Sawamura, Norio, both of Osaka; Hashimoto, Yukio; and Hashida, Wataru, to Fuji Oil Company, Ltd. Method for producing cacao butter substitute. 4,268,527, Cl. 426-33.000.

Matsuoka, Hideoki; and Yamamoto, Yoshimi, to Nissan Motor Company, Limited; and Fuji Kiko Kabushiki Kaisha. Safety alarm system for an automatic seat belt. 4,268,816, Cl. 340-52.00E.

Matsushita Electric Industrial Co., Ltd.: *See*—
Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,268,809, Cl. 333-202.000.
Uragaki, Tamotsu; Inoue, Morio; Koike, Susumu; and Iwasa, Hitoo, 4,268,327, Cl. 148-171.000.

Mauch, Jerry L.: *See*—
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Maul Technology Corporation: *See*—
Rhett, Chester K., 4,268,298, Cl. 65-327.000.

Mauri, Luigi: *See*—
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Maurice, Jean; and Quesnel, Raymond, to Regie Nationale des Usines Renault. Cooling tower. 4,267,883, Cl. 165-129.000.
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May, Michael A. Swimming pool accessory. 4,268,386, Cl. 210-169.000.
Mayer, Fritz: *See—*
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Mayer, James R., to Cooper Industries, Inc. Positioning control system for rock drill support apparatus. 4,267,892, Cl. 173-43.000.
Mayfran, Div. of Fischer Industries, Inc.: *See—*
Vacca, Miguel; and Morris, James C., 4,268,205, Cl. 414-219.000.
Maynard, Walter P., Jr. Liquid funnel and container piercing blade combination. 4,267,945, Cl. 222-83.500.
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McCall, Francis J. Apparatus for electrical impulse acupressure treatment. 4,267,838, Cl. 128-303.00R.
McCarthy, Roy F. J., to Dowty Rotol Limited. Foam-containing structures. 4,268,571, Cl. 428-236.000.
McColl, Bruce J., to B. J. McColl & Company, Ltd. Composite high mobility tire for off-road vehicles. 4,267,873, Cl. 152-339.000.
McCord, Kenneth R.: *See—*
Barger, Larry N.; and McCord, Kenneth R., 4,267,833, Cl. 128-214.00F.
Barger, Larry N.; McCord, Kenneth R.; and Vidal, Claude A., 4,267,834, Cl. 128-214.00F.
Barger, Larry N.; and McCord, Kenneth R., 4,267,835, Cl. 128-214.00E.
McCormick, Everett N. Method of enhancing bimanual dexterity. 4,268,254, Cl. 434-247.000.
McCrickerd, John T., to Laser Products Corporation. Curved mirror lasers and methods of operating same. 4,268,799, Cl. 331-94.50C.
McDonald, Ray S.; and Hartlaub, Jerome T., to Medtronic, Inc. Means to inhibit a digital cardiac pacemaker. 4,267,843, Cl. 128-419.0PT.
McDonnell Douglas Corporation: *See—*
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McGeary, Thomas C. Score processing system for use with ID cards. 4,268,744, Cl. 235-375.000.
McGregor, Kenneth: *See—*
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McKay, Dwight L.: *See—*
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McKee, Fount E., to Delta-X Corporation. Hydraulic pumping unit. 4,268,228, Cl. 417-390.000.
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McKinley, Victor W.; and McKinley, Fred D. Training device for developing roping skills. 4,268,037, Cl. 273-359.000.
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McLaughlin, Donald L.; and Beshenich, Paul J., to Mars, Inc. Vending apparatus price interface. 4,267,915, Cl. 194-1.00N.
McMillan, Ronald R. Wire holder. 4,267,995, Cl. 248-74.00R.
McReynolds, Kent B.: *See—*
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Mead Corporation, The: *See—*
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Megumi, Hiroshi: *See—*
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Meiners, Larry G., to United States of America, Navy. Insulated gate field-effect transistors. 4,268,844, Cl. 357-23.000.
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Melkonian, Mark S.: *See—*
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Mendelson, Richard N.: *See—*
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Meredith, James E., to Bigelow-Sanford, Inc. Method and apparatus for immersion printing of pile fabrics. 4,268,263, Cl. 8-149.000.
Meschkat, Ursula; and Bimczok, Rudolf, to Blendax-Werke R. Schneider GmbH & Co. Liquid detergent compositions having washing and softening properties. 4,268,401, Cl. 252-8.800.
Mesco, Bernard, to Hughes Aircraft Company. Kinematic mount. 4,268,123, Cl. 350-310.000.
Messer, Leonard, to American Minechem Corporation. Method of making activated carbon. 4,268,417, Cl. 252-421.000.
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Micciche, Peter. Buoyancy energy engine. 4,267,695, Cl. 60-473.000.
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Miki, Yusaku; Yamamoto, Hidemi; Kimihira, Yuichi; and Tanaka, Akio, to Tokyo Shibaura Denki Kabusiki Kaisha. Stack control system and method for data processor. 4,268,903, Cl. 364-200.000.
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Milchem Incorporated: *See—*
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Pavlicek, Cleone J., 4,267,936, Cl. 220-262.000.
Miller, Dale C.: *See—*
Hitt, William H., Jr., 4,267,826, Cl. 126-440.000.
Miller, Lester C.: *See—*
Cottrell, Merlyn F.; Gauthier, Dale J.; and Miller, Lester C., 4,268,742, Cl. 219-532.000.
Miller, Robert J.: *See—*
Ahn, Kie Y.; Bajorek, Christopher H.; Ho, Paul S.; Miller, Robert J.; and Powers, John V., 4,268,584, Cl. 428-620.000.
Milles, Peter, to S. Franzen Sohne (GmbH & Co.). Combination lock for baggage. 4,267,716, Cl. 70-70.000.
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Brown, Robert S.; and Satterfield, Larry S., 4,267,617, Cl. 15-320.000.
Millner, Alan R., to Massachusetts Institute of Technology. Magnetic bearing. 4,268,095, Cl. 308-10.000.

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Milne, Robert, to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Broadband shaped beam antenna employing a cavity backed spiral radiator. 4,268,833, Cl. 343-833.000.
Milwaukee Dustless Brush Co.: *See*—
Hunt, Frederick B., 4,267,616, Cl. 15-182.000.
Mine, Katsutoshi; Kubota, Yoshitaka; and Maruyama, Tsuneo, to Toray Silicone Company, Ltd. Noncurable sealing materials. 4,268,452, Cl. 260-37.0SB.
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Horie, Toshio; Tomioka, Shouji; and Mine, Nobuyoshi, 4,268,397, Cl. 210-746.000.
Minifie, Bernard W.; and Czyzewski, Ted S., to Groen Division - Dover Corporation. Method and apparatus for manufacturing crystalline food products. 4,267,703, Cl. 62-123.000.
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Christian, J. Robert; and Mink, James W., 4,268,832, Cl. 343-786.000.
Minnesota Mining and Manufacturing Company: *See*—
Hampl, Edward F., Jr., 4,268,710, Cl. 136-205.000.
Leseman, Ronald P.; and Kurhajec, George A., 4,268,598, Cl. 430-107.000.
Manzara, Anthony P., 4,268,657, Cl. 528-155.000.
Moris, Alfred H.; and Wysocki, Steven S., 4,268,877, Cl. 360-94.000.
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Doi, Yasuhiko; Iwao, Soichi; and Takagishi, Takaharu, 4,268,163, Cl. 355-14.0SH.
Kobori, Toshio; and Miyamoto, Takayoshi, 4,268,151, Cl. 354-219.000.
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Srapeniants, Rigo A.; Saveliev, Igor B.; Kovtun, Jury L.; Sidorov, Alexandr V.; Tsagolov, Kim S.; and Miroshnikova, Nadezhda N., 4,268,754, Cl. 250-391.000.
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Mishima, Yasuhiro: *See*—
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Imahori, Seiichi; Murata, Yukichi; Maeda, Syuichi; and Suzuki, Sumio, 4,268,671, Cl. 544-245.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Iwaki, Yoshiyuki; and Fujioka, Katsuhiko, 4,268,770, Cl. 310-72.000.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; Oda, Ryoichi; and Takamizawa, Yuji, 4,268,690, Cl. 562-416.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Mitsubishi Paper Mills, Ltd.: *See*—
Tsukahara, Hirokazu; Fuchigami, Mitsuru; and Kagota, Nobuhiro, 4,268,634, Cl. 525-471.000.
Mitsubishi Rayon Co., Ltd.: *See*—
Shindo, Mizuo; Yamamoto, Takashi; and Kamada, Kensuke, 4,268,279, Cl. 55-16.000.
Mitsui, Akio; and Suzuki, Yoshiaki, to Fuji Photo Film Co., Ltd. Color photographic light-sensitive material. 4,268,617, Cl. 430-373.000.
Mitsuyama, Yoshiaki: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Mitsuyama, Yoshiaki; and Tanaka, Shigeho, 4,267,734, Cl. 73-650.000.
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Kokubo, Eiichi; and Miyagawa, Tuyoshi, 4,268,024, Cl. 271-95.000.
Miyaguchi, Akinori; Morita, Yasuomi; and Chino, Yasuyoshi, to Nippon Zeon Co. Ltd.; and Morimura Chemetron Ltd. Process for producing novel modified resin. 4,268,427, Cl. 260-23.70C.
Miyamoto, Takayoshi: *See*—
Kobori, Toshio; and Miyamoto, Takayoshi, 4,268,151, Cl. 354-219.000.
Miyamoto, Yukihiko: *See*—
Ienaka, Masanori; Wada, Takeshi; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,268,762, Cl. 307-268.000.
Miyashita, Tsuneo; Sato, Yoshio; and Ando, Yoshitsugu, to Nippon Kokan Kabushiki Kaisha. Method for continuously manufacturing high-temperature reducing gas. 4,268,412, Cl. 252-373.000.
Miyata, Junji; and Kurohara, Kazuaki, to Kubota, Ltd. Structure for attaching hitch to tractor. 4,268,056, Cl. 280-456.00A.
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., to Opticol Corporation. Fiber collagen contact lens. 4,268,131, Cl. 351-160.00H.
Mizobuchi, Yuzo: *See*—
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,268,575, Cl. 428-336.000.
Mizuno Sporting Goods Co., Ltd.: *See*—
Imamichi, Yoshio, 4,267,710, Cl. 66-196.000.
Mizutani, Nagao; Okawara, Yasuo; and Shimazaki, Toshikazu, to Citizen Watch Co., Ltd. Device for detecting travel condition of inkribbon for printers. 4,268,182, Cl. 400-247.000.
Mobil Oil Corporation: *See*—
Fahmy, Mohamed A., 4,268,508, Cl. 424-222.000.
Herrington, F. John, Jr., 4,268,239, Cl. 425-467.000.
Mills, William R., Jr., 4,268,749, Cl. 250-269.000.
Paul, Jill H., 4,268,525, Cl. 424-326.000.
Modern Machinery Company, Ltd.: *See*—
Kobayasi, Sohei, 4,268,260, Cl. 493-194.000.
Moerre, Manfred, to Singer Company, The. Fuse holder assembly. 4,268,106, Cl. 339-147.00R.
Moerre, Manfred, to Singer Company, The. Fuse holder. 4,268,107, Cl. 339-147.00R.
Moertel, George B., to Textron, Inc. Method of molding using a molding wheel and flexible belt. 4,268,474, Cl. 264-252.000.
Mogensen, Vagn; Jorgensen, Villy E.; and Krebs, Peter, to Dansk Industri Syndikat A/S. Apparatus for producing casting mould parts by compressing sand or a similar material between a pressure plate and a counter-pressure plate. 4,267,878, Cl. 164-187.000.
Mohan, Raam R.; Silbernagel, Bernard G.; and Singhal, Gopal H., to Exxon Research & Engineering Co. Regeneration of spent hydrodesulfurization catalysts with heteropoly acids and hydrogen peroxide. 4,268,415, Cl. 252-413.000.
Moisson, Marc F. L.: *See*—
Sovish, Richard C.; and Moisson, Marc F. L., 4,268,041, Cl. 277-1.000.
Moller, Werner: *See*—
Gesswein, Eberhard; and Moller, Werner, 4,268,594, Cl. 430-24.000.
Monsanto Company: *See*—
Dobo, Emerick J.; and Graham, Tommy E., 4,268,278, Cl. 55-16.000.
Howe, Robert K., 4,268,299, Cl. 71-76.000.
Kocay, Witold R., 4,267,864, Cl. 139-420.00R.
Terry, Alvah B., 4,267,626, Cl. 29-163.50F.
Tinker, Harold B.; and Solodar, Arthur J., 4,268,688, Cl. 560-177.000.
Tolbert, William R.; Kuo, Mau-Jung; and Feder, Joseph, 4,268,629, Cl. 435-41.000.
Tremont, Samuel J.; Williamson, Alex N.; and Solodar, Arthur J., 4,268,704, Cl. 585-428.000.
Williams, Louis B., Jr., 4,268,550, Cl. 427-429.000.
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Monsarrat, William G.; and Neal, William F., to United Technologies Corporation. Compressor structure adapted for active clearance control. 4,268,221, Cl. 415-116.000.
Montgomery, Lionel C., to Union Carbide Corporation. High density refractory composites and method of making. 4,268,314, Cl. 106-65.000.
Montgomery, Lon W.: *See*—
Salon, Sheppard J.; and Montgomery, Lon W., 4,268,883, Cl. 361-21.000.
Montigny, Jean, to Harle & Lechopiez. Preparation of cheese from ultrafiltered milk. 4,268,528, Cl. 426-40.000.
Montmarquet, Francis H., Jr., to Repeat-O-Type Stencil Manufacturing Co., Inc. Stencil sheet with solventless coating and method of preparation. 4,268,576, Cl. 428-342.000.
Moog GmbH: *See*—
Handte, Herbert; and Kollmar, Friedrich, 4,268,794, Cl. 328-185.000.
Moore, Christopher H. Time-modulated delay system and improved reverberation simulator using same. 4,268,717, Cl. 179-1.00J.
Moore, Mack W., Jr., to Cavalier Carpets. Artificial grass surface and method of installation. 4,268,551, Cl. 428-17.000.
Moran, Gregory F.: *See*—
Eddelman, Roy T.; and Moran, Gregory F., 4,267,729, Cl. 73-425.40P.
Moran, Michael J.: *See*—
Cieslak, Patrick J.; and Moran, Michael J., 4,267,768, Cl. 493-203.000.
Mori, Akinori, to Sumitomo Electric Industries, Ltd. Shielded wire. 4,268,714, Cl. 174-108.000.
Mori, Masaharu: *See*—
Amazawa, Kiyoshi; Mori, Masaharu; and Taniyama, Takashi, 4,268,793, Cl. 328-165.000.
Mori, Ryutaro; and Iwamoto, Akira, to West Electric Company, Ltd. Photo-detection adapter for an automatic flash device. 4,268,141, Cl. 354-35.000.
Morimura Chemetron Ltd.: *See*—
Miyaguchi, Akinori; Morita, Yasuomi; and Chino, Yasuyoshi, 4,268,427, Cl. 260-23.70C.
Morio, Minoru; Kambara, Masahiro; Kubota, Yukio; and Yamashita, Keitaro, to Sony Corporation. Avoidance of disturbance of horizontal sync signals in video signal reproduced at other than standard tape speed. 4,268,875, Cl. 360-10.000.

Moris, Alfred H.; and Wysocki, Steven S., to Minnesota Mining and Manufacturing Company. Recording and/or playback machine which affords use of various sized magazines. 4,268,877, Cl. 360-94.000.

Morita, Yasuomi: *See*—
Miyaguchi, Akinori; Morita, Yasuomi; and Chino, Yasuyoshi, 4,268,427, Cl. 260-23.70C.

Morris, David L.: *See*—
Ellis, Paul B.; and Morris, David L., 4,268,631, Cl. 435-190.000.

Morris, James C.: *See*—
Vacca, Miguel; and Morris, James C., 4,268,205, Cl. 414-219.000.

Morris, Ralph F., to Dunlop Limited. Tube type pump and wave motor. 4,268,226, Cl. 417-332.000.

Morrison, Donald E.: *See*—
Fung, Anthony K. L.; Morrison, Donald E.; and Pernet, Andre G., 4,268,691, Cl. 568-322.000.

Morrison, Raymond C., to Raytheon Company. Cathode cup having support flanges sloped symmetrically in opposing axial directions. 4,268,776, Cl. 313-446.000.

Mosher, Larry: *See*—
Benson, Donald H.; and Mosher, Larry, 4,267,814, Cl. 125-15.000.

Moskowitz, Ilene J. Instructional writing paper for perceptually impaired children. 4,268,256, Cl. 434-162.000.

Mostmans, Joseph H.: *See*—
Heeres, Jan; Backx, Leo J. J.; and Mostmans, Joseph H., 4,268,680, Cl. 548-336.000.

Motonami, Masanao: *See*—
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, 4,268,068, Cl. 280-804.000.

Motorenfabrik Hatz GmbH & Co. KG: *See*—
Schmuck, Johann, 4,267,805, Cl. 123-198.00E.

Motorola, Inc.: *See*—
Casey, John F.; and Vyne, Robert L., 4,268,848, Cl. 357-60.000.
Eckert, Kim, 4,268,764, Cl. 307-354.000.
Eickerman, Curtis L., 4,267,776, Cl. 102-215.000.
Little, Richard I.; Lubin, Barry D.; and Spear, Stephen L., 4,268,722, Cl. 179-2.0EB.
Parmet, Bernard S., 4,268,915, Cl. 455-158.000.
Reichart, Elwood C., 4,268,798, Cl. 330-289.000.

Motosugi, Katsuhiko: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Motosugi, Katsuhiko, 4,267,806, Cl. 123-287.000.

Muenker, Adolf H.; and Young, Archie R., II, to Exxon Research & Engineering Co. High temperature solar absorber coating and method of applying same. 4,268,319, Cl. 106-288.00B.

Muhr, Richard; and Schroder, Werner, to Muhr und Bender. Hold-down for power shear. 4,267,756, Cl. 83-463.000.

Muhr, Richard; and Schroder, Werner, to Muhr und Bender. Actuator mount for power shear or punch. 4,267,758, Cl. 83-571.000.

Muhr und Bender: *See*—
Muhr, Richard; and Schroder, Werner, 4,267,756, Cl. 83-463.000.
Muhr, Richard; and Schroder, Werner, 4,267,758, Cl. 83-571.000.

Mull, John D. Method of introducing a liquid into a measuring tube. 4,267,723, Cl. 73-61.400.

Mullenberg, Ralph. Mounting attachment. 4,268,185, Cl. 403-16.000.

Muller, Rolf: *See*—
Jellinek, Karl; and Muller, Rolf, 4,268,649, Cl. 525-504.000.

Muller, Thomas P., to Caterpillar Tractor Co. Guard structure for fluid conduits of hydraulic cylinders of mobile apparatus. 4,267,674, Cl. 52-115.000.

Muller, Werner, to Hermann Berstorff Maschinenbau GmbH. Planetary extruder for thermoplastics material. 4,268,176, Cl. 366-83.000.

Muller, Zdenek. Air brake safety mechanism. 4,268,093, Cl. 303-89.000.

Multinorm B.V.: *See*—
Vissers, Hermanus H.; and Mijnders, Gijsbert J., 4,267,688, Cl. 56-16.400.

Mumford, Robin B., to Allied Chemical Corporation. Thermal-pane window with liquid crystal shade. 4,268,126, Cl. 350-331.00R.

Muntwyler, Rene; and Burdeska, Kurt, to Ciba-Geigy Corporation. 3-Hydroxydiphenyl ethers. 4,268,693, Cl. 568-637.000.

Murakami, Eugene T.; and Gray, Thomas A., to Thomas Gray & Associates, Inc., Division LevelLink. Level detection device for enclosed tanks. 4,268,753, Cl. 250-357.000.

Murakami, Tadayoshi: *See*—
Arashi, Norio; Murakami, Tadayoshi; Narato, Kiyoshi; Shiga, Masaaki; and Ishikawa, Tomihisa, 4,268,482, Cl. 422-171.000.

Muramatsu, Toshio, to Konishiroku Photo Industry Co., Ltd. Electrophotographic copying apparatus capable of reproducing electric signal image. 4,268,160, Cl. 355-3.00R.

Murari, Bruno: *See*—
Ghiringelli, Giovanni; and Murari, Bruno, 4,268,887, Cl. 361-93.000.

Murase, Ichiki: *See*—
Sano, Takezo; Shimomura, Takatoshi; and Murase, Ichiki, 4,268,662, Cl. 528-486.000.

Murata, Yukichi: *See*—
Imahori, Seiichi; Murata, Yukichi; Maeda, Syuichi; and Suzuki, Sumio, 4,268,671, Cl. 544-245.000.

Murayoshi, Seizi, to Ricoh Company, Ltd. Sheet feeding apparatus. 4,268,025, Cl. 271-112.000.

Muren, James F.: *See*—
Lombardino, Joseph G.; Otterness, Ivan G.; and Muren, James F., 4,268,516, Cl. 424-273.00P.

Murphy, Randall T.: *See*—
Chekirda, Russell F.; Murphy, Randall T.; and Lyszczarz, Walter, 4,267,999, Cl. 248-418.000.

Murray, Robert C., to Valeron Corporation, The. Controller for tool compensation system. 4,268,783, Cl. 318-565.000.

Murrell, Lawrence L.: *See*—
Oswald, Alexis A.; and Murrell, Lawrence L., 4,268,682, Cl. 556-465.000.

Murtha, Timothy P.; and Zuech, Ernest A., to Phillips Petroleum Company. Hydroalkylation using nickel-ruthenium catalyst on zeolite type support. 4,268,699, Cl. 585-268.000.

Muskegon Piston Ring Company: *See*—
Nisper, Kenneth J., 4,268,046, Cl. 277-139.000.

Muxfeldt, Hans; and Dahlke, Hermann, to Ethicon, Inc. Injectable embolization and occlusion solution. 4,268,495, Cl. 424-1.000.

Muzyczko, Thaddeus M.; and Jones, Thomas H., to Richardson Company, The. Device for use in photochemical and photomechanical processes. 4,268,608, Cl. 430-270.000.

Myers, Jimmy D.; and Fratzke, Lawrence F., to Caterpillar Tractor Co. Fire extinguishing system including sensor comparable to determine charge. 4,267,890, Cl. 169-75.000.

Naab, Carlton W.; and Jankowiak, Roman, to Conax Corporation. Flood valve. 4,267,854, Cl. 137-72.000.

Nagahara, Sin. Radio-controlled steering device for toy motorcycles. 4,267,663, Cl. 46-254.000.

Nagai, Hisao: *See*—
Shimokawa, Shin-ichi; Yamamoto, Yuji; and Nagai, Hisao, 4,268,638, Cl. 525-263.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Limiter circuit. 4,268,789, Cl. 323-315.000.

Nagano, Keisuke: *See*—
Yamamoto, Katsuji; Iwasaki, Yuichiro; Adachi, Akira; Kawata, Toshiro; Nagano, Keisuke; Fujita, Seiichi; and Harada, Mikio, 4,268,295, Cl. 65-19.000.

Naganuma, Tsutomu; Hoshi, Hisao; Kumagai, Hiroji; and Yoshida, Kaneki, to Toppan Printing Co., Ltd. Dry planographic printing apparatus. 4,268,158, Cl. 355-3.00R.

Nagatani, Toshio: *See*—
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,268,620, Cl. 430-403.000.

Nakada, Mitsugu: *See*—
Teraoka, Akira; and Nakada, Mitsugu, 4,268,048, Cl. 280-5.00A.

Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Hara, Shozo; Tanaka, Toshikazu; and Taira, Akira, to Kobe Steel, Limited. Green tire conveying method and apparatus. 4,268,219, Cl. 414-786.000.

Nakagawa, Sadayoshi; and Shinohara, Mitsuharu, to Hosiden Electronics Co., Ltd. Electret microphone. 4,268,725, Cl. 179-111.00E.

Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, to Citizen Watch Co., Ltd. Electronic calculator watch. 4,268,913, Cl. 368-10.000.

Nakahata, Kimio; Aguro, Yoshinori; and Tamura, Yasuyuki, to Canon Kabushiki Kaisha. Electrophotographic apparatus with corona discharge control. 4,268,161, Cl. 355-3.0CH.

Nakajima, Yukio: *See*—
Kondo, Isao; and Nakajima, Yukio, 4,268,140, Cl. 354-34.000.

Nakamura, Hiroya: *See*—
Yajima, Tatsuo; and Nakamura, Hiroya, 4,268,164, Cl. 355-41.000.

Nakamura, Kotaro: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,268,605, Cl. 430-216.000.

Nakamura, Makoto: *See*—
Ogawa, Tetsuya; Yoshizaki, Norio; Katsuragi, Tadakatsu; Nakamura, Makoto; and Shiiba, Kiyonori, 4,268,362, Cl. 203-28.000.

Nakamura, Takashi, to Sony Corporation. Sync generator for a color television system. 4,268,852, Cl. 358-17.000.

Nakamura, Takashi; and Taki, Akira, to Sony Corporation. Synchronizing signal generator for a PAL television signal processing system. 4,268,853, Cl. 358-17.000.

Nakane, Hisashi: *See*—
Nakayama, Muneo; Nishimura, Toshihiro; Hashimoto, Akira; Nakane, Hisashi; and Kimura, Teruo, 4,268,539, Cl. 427-108.000.

Nakanishi, Kiyoshi: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Motosugi, Katsuhiko, 4,267,806, Cl. 123-287.000.

Nakano, Kazuo; Iwabuchi, Toshiyuki; and Yamamoto, Ichiji, to OKI Electric Industry Co., Ltd. Thermal recording system. 4,268,838, Cl. 346-76.0PH.

Nakao, Sho: *See*—
Shiba, Keisuke; Toyama, Tadao; and Nakao, Sho, 4,268,609, Cl. 430-271.000.

Nakayama, Muneo; Nishimura, Toshihiro; Hashimoto, Akira; Nakane, Hisashi; and Kimura, Teruo, to Tokyo Denshi Kagaku Kabushiki Kaisha. Liquid coating composition for forming transparent conductive films and a coating process for using said composition. 4,268,539, Cl. 427-108.000.

Nakayama, Shozo; Kato, Kimio; and Fujii, Tomoo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Structure of a shoe for a swash plate type compressor. 4,268,225, Cl. 417-269.000.

Nakayama Steel Works, Limited: *See*—
Yamamoto, Katsuji; Iwasaki, Yuichiro; Adachi, Akira; Kawata, Toshiro; Nagano, Keisuke; Fujita, Seiichi; and Harada, Mikio, 4,268,295, Cl. 65-19.000.

Nalco Chemical Company: *See*—
Cosper, David R.; and Soll, Patricia R., 4,268,352, Cl. 162-191.000.

Namiki, Ryo: *See—*
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.

Namiki, Tomizo; Shinozaki, Fumiaki; and Ikeda, Tomoaki, to Fuji Photo Film Co., Ltd. Photosensitive image forming material and an image forming method using same. 4,268,601, Cl. 430-159.000.

Namiki, Tomizo: *See—*
Shinozaki, Fumiaki; Namiki, Tomizo; Kitajima, Masao; Ikeda, Tomoaki; and Mizobuchi, Yuzo, 4,268,575, Cl. 428-336.000.

Napco, Inc.: *See—*
Johnson, Charles M., 4,268,206, Cl. 414-222.000.

Narasimhan, Mandayam C., to Allied Chemical Corporation. Strips of metallic glasses containing embedded particulate matter. 4,268,564, Cl. 428-143.000.

Narato, Kiyoshi: *See—*
Arashi, Norio; Murakami, Tadayoshi; Narato, Kiyoshi; Shiga, Masaaki; and Ishikawa, Tomihisa, 4,268,482, Cl. 422-171.000.

Natinsky, Ronald E. Power window lift assembly. 4,267,668, Cl. 49-349.000.

National Research Development Corporation: *See—*
Banister, Arthur J.; Fielder, Andrew J.; Hauptman, Zdenek V.; and Smith, Nigel R. M., 4,268,491, Cl. 423-406.000.
Capaccio, Giancarlo; and Ward, Ian M., 4,268,470, Cl. 528-502.000.

National Semiconductor Corporation: *See—*
Gray, Bruce; Harris, James M.; and Gouin, William M., 4,268,849, Cl. 357-71.000.

National Starch and Chemical Corporation: *See—*
Ray-Chaudhuri, Dilip K.; Chiao, Wen B.; and Schoenberg, Jules E., 4,268,656, Cl. 528-103.000.

National Steel Corporation: *See—*
Smith, James T., 4,267,954, Cl. 228-173.00D.

Natori, Minoru: *See—*
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.

Natter, Howard. Pedagogic molding apparatus. 4,268,242, Cl. 425-182.000.

Nava, Pierluigi: *See—*
Albano, Amedeo, 4,267,651, Cl. 36-131.000.

Navias, Louis: *See—*
Park, Dong-Sil; and Navias, Louis, 4,268,313, Cl. 106-54.000.

Neal, William F.: *See—*
Monsarrat, William G.; and Neal, William F., 4,268,221, Cl. 415-116.000.

Nealy, Robert B. Leash to surf mat connector. 4,267,615, Cl. 9-310.00E.

Neefe, Charles W. Oxygen generating contact lens. 4,268,132, Cl. 351-160.00H.

Neel, Robert M.; Waite, James B.; and Yoknis, Myron, to Teledyne Industries, Inc. Programmable thermostat. 4,267,966, Cl. 236-46.00A.

Neff, James A.; Fagerlie, Richard A.; and Bowman, Walter J., to Mac Valves, Inc. Directional control valve with flow path through valve spool. 4,267,862, Cl. 137-625.640.

Negro, Guido, to Bielomatik Leuze GmbH & Co. Apparatus for producing coils. 4,267,865, Cl. 140-92.940.

Nelson, Cecil O. Solar energy collector. 4,267,821, Cl. 126-417.000.

Nelson, Hoyt H.: *See—*
Curchod, Donald B.; and Nelson, Hoyt H., 4,267,730, Cl. 73-462.000.

Nemeth, William R., to Diamond Shamrock Corporation. Dental compositions of improved properties. 4,268,310, Cl. 106-38.350.

Neopharmed S.p.A.: *See—*
Reiner, Alberto, 4,268,685, Cl. 560-56.000.

Nercessian, Sarkis, to Kepco, Inc. Programmable high voltage power supply with negative ground. 4,268,790, Cl. 323-318.000.

Neti, Radhakrishna M., to Beckman Instruments, Inc. High temperature, CO_2 interference free, electrochemical O_2 sensor. 4,268,370, Cl. 204-195.00P.

Neuhring, Harley D. Combination combine and hay head. 4,267,687, Cl. 56-14.400.

Neville, Robert S., to ICI Australia Limited. Processes of making prilled ammonium nitrate compositions. 4,268,490, Cl. 423-266.000.

New World Computer Company, Inc.: *See—*
Kearns, William J., 4,268,878, Cl. 360-97.000.

Newhouse, Thomas J.: *See—*
Randolph, Travis M.; and Newhouse, Thomas J., 4,267,677, Cl. 52-242.000.

Nguyen Mong, Lan, to Symphar S.A. Monophosphonate compounds as hypoglycemic and/or antiartherogenic agents. 4,268,507, Cl. 424-217.000.

Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., to Continental Pharma. Pharmaceutical composition and therapeutical method for treating degenerative affections of the articular cartilage. 4,268,517, Cl. 424-283.000.

Nield, Eric: *See—*
Maslen, John; and Nield, Eric, 4,268,432, Cl. 260-45.75B.

Nieling, James R.: *See—*
Berglund, Neil C.; and Nieling, James R., 4,268,902, Cl. 364-200.000.

Nielson, Donald L.; Fylstra, David J.; and Stehle, Roy H., to SRI International. Portable telephone communication device for the hearing impaired. 4,268,721, Cl. 179-2.00C.

Nierlich, Franz: *See—*
Franz, Gerhard; Nierlich, Franz; and Ratajczak, Hans-Josef, 4,268,448, Cl. 260-346.750.

Niesen, George P.: *See—*
Oleksiak, Richard L.; and Niesen, George P., 4,268,027, Cl. 271-153.000.

Nightingale, Douglas D. J., to Imperial Chemical Industries Limited. Valve. 4,268,472, Cl. 264-230.000.

Nilsson, Bengt: *See—*
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,267,937, Cl. 220-267.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,268,336, Cl. 156-244.130.

Ninomiya, Masakazu: *See—*
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.

Nintendo Company Limited: *See—*
Yokoi, Gunpei, 4,268,036, Cl. 273-316.000.

Nippon Clean Engine Laboratory Co.: *See—*
Onishi, Shigeru; and Kato, Satoshi, 4,268,461, Cl. 261-39.00B.

Nippon Electric Co., Ltd.: *See—*
Hareyama, Kyuichi, 4,268,820, Cl. 340-347.0NT.
Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, 4,268,847, Cl. 357-52.000.
Takahashi, Hiroshi, 4,268,855, Cl. 358-36.000.
Tokunaga, Tadatsugu; and Fujii, Akira, 4,268,760, Cl. 307-562.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Aoki, Eiichiro; and Suzuki, Tsutomu, 4,267,762, Cl. 84-1.030.
Futamase, Tsuyoshi; and Chibana, Masanobu, 4,267,763, Cl. 84-1.220.

Nippon Kogaku K.K.: *See—*
Daitoku, Koichi, 4,268,154, Cl. 354-238.000.
Ishibashi, Kazufumi; and Ichimura, Takeo, 4,268,312, Cl. 106-47.00Q.
Wakabayashi, Hiroshi, 4,268,148, Cl. 354-173.000.

Nippon Kokan Kabushiki Kaisha: *See—*
Miyashita, Tsuneo; Sato, Yoshio; and Ando, Yoshitsugu, 4,268,412, Cl. 252-373.000.

Nippon Mining Co., Ltd.: *See—*
Kawakami, Katsuhiko; Komori, Kenji; and Megumi, Hiroshi, 4,268,414, Cl. 252-412.000.

Nippon Soken, Inc.: *See—*
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.

Nippon Steel Corporation: *See—*
Iwayama, Kenzo; and Tanaka, Osamu, 4,268,326, Cl. 148-113.000.

Nippon Zeon Co. Ltd.: *See—*
Maeda, Akio; Hashimoto, Kinro; Inagami, Masaaki; and Fukushima, Hiroshi, 4,268,644, Cl. 525-403.000.
Miyaguchi, Akinori; Morita, Yasuomi; and Chino, Yasuyoshi, 4,268,427, Cl. 260-23.70C.

Nippondenso Co., Ltd.: *See—*
Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, 4,268,910, Cl. 364-431.000.

Nishida, Minoru: *See—*
Imanaka, Hiroshi; and Nishida, Minoru, 4,268,503, Cl. 424-114.000.

Nishikawa, Yasuhisa; and Kanai, Takao. Pushbutton tuner. 4,267,739, Cl. 74-10.330.

Nishimori, Toyohiko: *See—*
Kawada, Shigeki; Oyama, Shigeaki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Nishimori, Toyohiko, 4,268,781, Cl. 318-434.000.

Nishimura, Fumio: *See—*
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, 4,268,464, Cl. 264-22.000.

Nishimura, Toshihiro: *See—*
Nakayama, Muneo; Nishimura, Toshihiro; Hashimoto, Akira; Nakane, Hisashi; and Kimura, Teruo, 4,268,539, Cl. 427-108.000.

Nishiyama, Yukinori: *See—*
Kita, Yasuo; and Nishiyama, Yukinori, 4,267,903, Cl. 188-72.600.

Nisper, Kenneth J., to Muskegon Piston Ring Company. Multiple seal stationary sealing ring. 4,268,046, Cl. 277-139.000.

Nissan Motor Company, Limited: *See—*
Hiraiwa, Kazuyoshi, 4,267,907, Cl. 192-3.560.
Mase, Yasushi; and Okamura, Toshikazu, 4,267,809, Cl. 123-409.000.
Matsuoka, Hideoki; and Yamamoto, Yoshimi, 4,268,816, Cl. 340-52.00E.
Ota, Tadaki; Yoshikawa, Katsushi; and Saito, Masaaki, 4,268,462, Cl. 261-40.000.
Shimizu, Kenzo; and Matsuno, Yoshio, 4,267,993, Cl. 248-27.100.
Tanaka, Yoshiyuki, 4,267,743, Cl. 74-473.0SW.
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,267,910, Cl. 192-17.00R.

Nissen, Axel: *See—*
Horner, Michael; and Nissen, Axel, 4,268,446, Cl. 260-345.500.

Nissin Electric Co., Ltd.: *See—*
Goto, Takeshi; Tanaka, Akio; and Suzuki, Yasuo, 4,267,975, Cl. 239-83.000.

Nitto Electric Industrial Co., Ltd.: *See—*
Oshima, Nobuo; and Maeda, Sajiro, 4,268,127, Cl. 350-337.000.

Nix, Lothar H. W.: *See*—
Kourimsky, Josef A.; and Nix, Lothar H. W., 4,268,731, Cl. 200-67.0AA.
NL Industries, Inc.: *See*—
Khan, Farooq A., 4,268,013, Cl. 254-392.000.
Noack, Manfred G.; and Manke, Steven A., to Olin Corporation. Selective chromate removal from a chlorate solution. 4,268,486, Cl. 423-55.000.
Noel, Francis E., Jr., to International Business Machines Corporation. Signal coupling element for substrate-mounted optical transducers. 4,268,113, Cl. 350-96.200.
Noguchi, Kenzo: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Noik, Simon P., to Schlumberger Technology Corporation. Well pressure testing method. 4,267,726, Cl. 73-151.000.
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Shock absorbing bumper. 4,268,078, Cl. 293-120.000.
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Shock absorbing bumper. 4,268,079, Cl. 293-120.000.
Norlie, Bruce D.: *See*—
Norlie, Robert N.; and Norlie, Bruce D., 4,268,175, Cl. 366-19.000.
Norlie, Robert N.; and Norlie, Bruce D. Tractor mounted self-loading concrete mixing apparatus. 4,268,175, Cl. 366-19.000.
Norlin, Eric C.: *See*—
Wick, John B., Jr.; and Norlin, Eric C., 4,267,942, Cl. 221-2.000.
Norman, Robert W., Jr.: *See*—
Porter, Marion G.; Norman, Robert W., Jr.; and Flynn, Richard T., 4,268,907, Cl. 364-200.000.
Norris, Richard M., to Avco Corporation. Apparatus for improving particle separator efficiency. 4,268,287, Cl. 55-306.000.
Norris, Richard M.: *See*—
Kent, Peter; Norris, Richard M.; and Charlton, Alan J., 4,268,284, Cl. 55-269.000.
Northern Telecom Limited: *See*—
Chu, Pak-Jong, 4,268,726, Cl. 179-164.000.
Northrop Corporation: *See*—
Stappaerts, Eddy A., 4,268,801, Cl. 331-94.5ML.
Nortron Corporation: *See*—
Curchod, Donald B.; and Nelson, Hoyt H., 4,267,730, Cl. 73-462.000.
Nuerrenbach, Axel: *See*—
Kropp, Rudolf; Thoemel, Frank; Nuerrenbach, Axel; Hoffman, Werner; Wenisch, Franz; and Fuchs, Hartwig, 4,268,445, Cl. 260-345.200.
Numakura, Toshihiko: *See*—
Yamagiwa, Kazuo; Kamakur, Masatoshi; and Numakura, Toshihiko, 4,268,874, Cl. 360-10.000.
N.V. Bekaert S.A.: *See*—
Baillievier, Freddy, 4,268,573, Cl. 428-295.000.
N.V. Raychem S.A.: *See*—
Sovish, Richard C.; and Moisson, Marc F. L., 4,268,041, Cl. 277-1.000.
Oakland Corporation, The: *See*—
Wallace, Richard B., 4,268,544, Cl. 427-264.000.
Obbink Industries, Inc.: *See*—
Obbink, Scott M., 4,268,213, Cl. 414-563.000.
Obbink, Scott M., to Obbink Industries, Inc. Vehicle hoist and towing device. 4,268,213, Cl. 414-563.000.
O'Brien, Thomas P.; and Benjamin, Lawrence, to Procter & Gamble Company, The. Liquid detergent composition. 4,268,406, Cl. 252-105.000.
O'Brien, William J., to Breville Holdings Pty. Limited. Electric fry pan. 4,268,741, Cl. 219-439.000.
Occidental Research Corporation: *See*—
Broniewski, Bogdan M., 4,268,366, Cl. 204-98.000.
Compton, Leslie E., 4,268,378, Cl. 208-254.00R.
O'Connor, Bernard J.; Ficken, William H.; Carnevale, Tony R.; and Lanni, Michael J., to Bendix Corporation, The. Dual suspension gyroscopic device having powered gimbal support. 4,267,737, Cl. 74-5.470.
Oda, Akira: *See*—
Ga, Eiichi; Chino, Koichi; Kikuchi, Makoto; Oda, Akira; and Horiuchi, Susumu, 4,268,409, Cl. 252-301.10W.
Oda, Ryoichi: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; Oda, Ryoichi; and Takamizawa, Yuji, 4,268,690, Cl. 562-416.000.
Oehler, Hermann, to Komet Stahlhalter- und Werkzeugfabrik Robert Breuning GmbH; and Oehler Maschinenbau GmbH. Fur-cutting apparatus. 4,267,755, Cl. 83-423.000.
Oehler Maschinenbau GmbH: *See*—
Oehler, Hermann, 4,267,755, Cl. 83-423.000.
Ogawa, Hiroshi: *See*—
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.
Ogawa, Hisashi: *See*—
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, 4,268,068, Cl. 280-804.000.
Ogawa, Junkichi; and Hamanka, Tsutomu, to Fuji Photo Film Co., Ltd. Process for forming photographic images. 4,268,616, Cl. 430-364.000.
Ogawa, Masasi: *See*—
Sera, Hidefumi; Kitatani, Katuzi; Ogawa, Masasi; Ishigaki, Kunio; and Shiraishi, Hisashi, 4,268,627, Cl. 430-623.000.
Ogawa, Tetsuya; Yoshizaki, Norio; Katsuragi, Tadakatsu; Nakamura, Makoto; and Shiiba, Kiyonori, to Chisso Corporation. Method for purifying acetic acid. 4,268,362, Cl. 203-28.000.
Ogi, Keiji; Sasaki, Takashi; Okaniwa, Kenichiro; and Tosaka, Yasuo, to Konishiroku Photo Industry Co., Ltd. Direct positive photographic material. 4,268,621, Cl. 430-409.000.
Oguchi, Toshiaki: *See*—
Nakagiri, Tadahiko; Daigo, Kunihiro; Oguchi, Toshiaki; Natori, Minoru; Hatuse, Toshikazu; Shimazaki, Toshikazu; Kawanobe, Kouhei; Ogawa, Hiroshi; Kashima, Yoshinobu; Ichikawa, Singo; Namiki, Ryo; and Yamagata, Hisao, 4,268,913, Cl. 368-10.000.
O'Halloran, John T., to Hayakawa Associates. Solar concentrator. 4,267,824, Cl. 126-426.000.
O'Handley, Robert C.; and Sullivan, Michael O., to Allied Chemical Corporation. Magnetic glassy metal alloy sheets with improved soft magnetic properties. 4,268,325, Cl. 148-108.000.
Ohashi, Azusa: *See*—
Okishi, Yoshio; Ohashi, Azusa; and Watanabe, Masaru, 4,268,611, Cl. 430-302.000.
Ohbayashi, Gentaro: *See*—
Yoshino, Tsuneo; and Ohbayashi, Gentaro, 4,268,602, Cl. 430-192.000.
Ohno, Shigeru; and Sekigawa, Fujio, to Shin-Etsu Chemical Co. Ltd. Sustained-release solid pharmaceutical dosage forms and preparation thereof. 4,268,496, Cl. 424-19.000.
Ohta, Naoto: *See*—
Kawada, Shigeki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Ohta, Naoto, 4,268,782, Cl. 318-434.000.
Ohta, Shigeto: *See*—
Katagiri, Kazuharu; Ishikawa, Shozo; Ohta, Shigeto; and Kitahara, Makoto, 4,268,595, Cl. 430-48.000.
Ohta, Tazuo: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; Oda, Ryoichi; and Takamizawa, Yuji, 4,268,690, Cl. 562-416.000.
Ohta, Wasaburo: *See*—
Ebi, Yutaka; Hirakura, Koji; Matsumoto, Fuyuhiko; Ohta, Wasaburo; and Tomita, Satoru, 4,268,157, Cl. 355-3.0TR.
Ohtsuka, Kunio: *See*—
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, 4,267,910, Cl. 192-17.00R.
Oka, Hiroshi: *See*—
Yoshida, Yoshinori; and Oka, Hiroshi, 4,268,447, Cl. 260-346.110.
Okamura, Toshikazu: *See*—
Mase, Yasushi; and Okamura, Toshikazu, 4,267,809, Cl. 123-409.000.
Okaniwa, Kenichiro: *See*—
Ogi, Keiji; Sasaki, Takashi; Okaniwa, Kenichiro; and Tosaka, Yasuo, 4,268,621, Cl. 430-409.000.
Okano, Takashi, to Universal Pioneer Corporation. Tracking servo drawing device in optical type information reading device. 4,268,745, Cl. 369-44.000.
Okawara, Yasuo: *See*—
Mizutani, Nagao; Okawara, Yasuo; and Shimazaki, Toshikazu, 4,268,182, Cl. 400-247.000.
Okazaki, Haruhiko: *See*—
Sakakibara, Takao; and Okazaki, Haruhiko, 4,268,542, Cl. 427-195.000.
Okegawa, Osamu: *See*—
Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Watanabe, Toshiyuki; Watanabe, Susumu; and Matsuda, Tetsuo, 4,268,665, Cl. 536-17.00R.
OKI Electric Industry Co., Ltd.: *See*—
Nakano, Kazuo; Iwabuchi, Toshiyuki; and Yamamoto, Ichiji, 4,268,838, Cl. 346-76.0PH.
Okishi, Yoshio; Ohashi, Azusa; and Watanabe, Masaru, to Fuji Photo Film Co., Ltd. Contact photographic process for producing a planographic printing plate. 4,268,611, Cl. 430-302.000.
Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Agent for protecting the surface of lithographic printing plate. 4,268,613, Cl. 430-309.000.
Okudaira, Haruo: *See*—
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, 4,268,464, Cl. 264-22.000.
Okuyama, Teiji, to Aisin Seiki Kabushiki Kaisha. Seat assembly for an automobile. 4,268,086, Cl. 297-63.000.
Okuyama, Yoshio: *See*—
Takasugi, Mitsuo; and Okuyama, Yoshio, 4,268,251, Cl. 433-75.000.
Olberg, Stirling M.; Fowler, Vernon J.; and Anderson, Bruce, to GTE Laboratories Incorporated. Scrambler speech transmission and synchronization system. 4,268,720, Cl. 179-1.50R.
Olds, Peter J.: *See*—
Blakeway, Richard S.; Blakeway, Stanley R.; and Olds, Peter J., 4,267,610, Cl. 5-60.000.
Oleksiak, Richard L.; and Niesen, George P., to A. B. Dick Company. Sheet feeding apparatus. 4,268,027, Cl. 271-153.000.
Olin Corporation: *See*—
Kershner, Stuart D., 4,267,952, Cl. 227-9.000.
Noack, Manfred G.; and Manke, Steven A., 4,268,486, Cl. 423-55.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Kunkel, Heinrich; Halliger, Leonard; Stolz, Robert; and Schurger, Rainer, to SKF Kugellagerfabriken GmbH. Conveyor belt roll. 4,267,920, Cl. 198-842.000.

Olschewski, Armin: *See—*
Ernst, Horst M.; Olschewski, Armin; Schurger, Rainer; Walter, Lothar; Brandenstein, Manfred; and Burkl, Erich, 4,267,913, Cl. 192-98.000.

Olsen, Everett O., to Foxboro Company, The. Apparatus for determining the state of each of a plurality of bi-state devices. 4,268,822, Cl. 340-533.000.

Olsfors, Jan: *See—*
Bois, Daniel; and Olsfors, Jan, 4,268,039, Cl. 369-220.000.

Olszewski, Egon: *See—*
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,267,718, Cl. 72-59.000.

Olympus Optical Co., Ltd.: *See—*
Kondo, Isao; and Nakajima, Yukio, 4,268,140, Cl. 354-34.000.
Matsuo, Kazumasa, 4,267,828, Cl. 128-6.000.
Saito, Shoichi, 4,268,881, Cl. 360-109.000.
Uetake, Toshifumi; and Matsubara, Masaki, 4,268,128, Cl. 350-410.000.

Omori, Norio; Fujisawa, Hideya; Kawashima, Yutaka; Ninomiya, Masakazu; Kawai, Hisasi; and Matsui, Takeshi, to Nippondenso Co., Ltd.; and Nippon Soken, Inc. Method for controlling timing of spark ignition for an internal combustion engine by feedback related to the detection of knocking. 4,268,910, Cl. 364-431.000.

Omron Tateisi Electronics Co.: *See—*
Iwakiri, Norio, 4,268,735, Cl. 200-314.000.

Omura, Yoshio: *See—*
Yoshikumi, Chikao; Omura, Yoshio; and Hotta, Tetsuya, 4,268,505, Cl. 424-180.000.

Onishi, Shigeru; and Kato, Satoshi, to Nippon Clean Engine Laboratory Co. Temperature compensating float arm for use in carburetors. 4,268,461, Cl. 261-39.00B.

Ono, Jun: *See—*
Sakai, Kunitaka; and Ono, Jun, 4,268,085, Cl. 296-217.000.

Ono, Shigetoshi: *See—*
Fujita, Shinsaku; Hayashi, Hidetoshi; Ono, Shigetoshi; Yoshida, Yoshinobu; and Harada, Tooru, 4,268,625, Cl. 430-562.000.

Onoda, Mamoru: *See—*
Kaneko, Dentaro; Onoda, Mamoru; Kimura, Yoshio; Inada, Yutaka; and Tomita, Masahiro, 4,268,303, Cl. 75-34.000.

Oppenheimer, Jess. Transverse force indicating device for swing teaching. 4,268,035, Cl. 273-186.00A.

Optelecom Incorporated: *See—*
Schmadel, Donald; Culver, William H.; and Gould, Gordon, 4,268,116, Cl. 350-96.290.

Optical Coating Laboratory, Inc.: *See—*
Gurev, Harold S., 4,268,711, Cl. 136-256.000.

Opticol Corporation: *See—*
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,268,131, Cl. 351-160.00H.

Orilio, Paul F.: *See—*
Beck, Joseph H.; and Orilio, Paul F., 4,267,967, Cl. 236-49.000.

Orth, Norman W.: *See—*
Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., 4,267,953, Cl. 228-118.000.

Orzikowski, Gunter, to Hellige GmbH. Ink jet recording instrument. 4,268,837, Cl. 346-75.000.

Osaka Soda Co. Ltd.: *See—*
Matoba, Yasuo, 4,268,640, Cl. 525-346.000.

Oshima, Nobuo; and Maeda, Sajiro, to Nitto Electric Industrial Co., Ltd. Light transmitting and reflecting polarizer. 4,268,127, Cl. 350-337.000.

Oshio, Hiromichi: *See—*
Uematsu, Tamon; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,268,301, Cl. 71-90.000.

Osho, Takatori, to Takatori Machinery Works Ltd. Automatic apparatus for feeding and fitting a gore piece to the inside thigh opening of a stocking material. 4,267,785, Cl. 112-121.120.

Ost, Clarence S. High-security cable television access system. 4,268,859, Cl. 358-114.000.

Oswald, Alexis A.; and Murrell, Lawrence L., to Exxon Research & Engineering Co. ω-Alkenyl silanes and $\alpha\omega$-silyl alkanes. 4,268,682, Cl. 556-465.000.

Ota, Tadaki; Yoshikawa, Katsushi; and Saito, Masaaki, to Nissan Motor Company, Limited. Variable venturi carburetor. 4,268,462, Cl. 261-40.000.

Otterness, Ivan G.: *See—*
Lombardino, Joseph G.; Otterness, Ivan G.; and Muren, James F., 4,268,516, Cl. 424-273.00P.

Outboard Marine Corporation: *See—*
Beem, W. Wayne, 4,268,258, Cl. 440-63.000.

Outokumpu Oy: *See—*
Leiponen, Matti O.; and Tonteri, Ossi T., 4,267,877, Cl. 164-155.000.

Ovens, Christopher W.: *See—*
Hughen, James F.; Herring, Jimmy R.; Biedermann, David A.; and Ovens, Christopher W., 4,268,827, Cl. 340-715.000.

Overall, Colin D., to U.S. Philips Corporation. Electron display tubes. 4,268,712, Cl. 174-50.630.

Owatonna Manufacturing Company, Inc.: *See—*
Rypka, Dann B., 4,267,804, Cl. 123-179.00K.

Owens-Corning Fiberglas Corporation: *See—*
Johnson, Donald T., 4,268,292, Cl. 65-2.000.

Owens-Illinois, Inc.: *See—*
Augsburger, William F., 4,267,624, Cl. 29-25.150.
Boling, Norman L., 4,268,709, Cl. 136-247.000.
Pfaender, Lawrence V., 4,268,296, Cl. 65-90.000.

Oy Wartsila Ab: *See—*
Martikainen, Kaarlo, 4,267,717, Cl. 70-366.000.

Oyama, Shigeaki: *See—*
Kawada, Shigeki; Oyama, Shigeaki; Fujioka, Yoshiki; Hirota, Mitsuhiko; and Nishimori, Toyohiko, 4,268,781, Cl. 318-434.000.

Ozawa, Keiji, to Victor Company of Japan, Ltd. System for transmitting carrier chrominance signals of color video signals. 4,268,854, Cl. 358-27.000.

Palara, Sergio, to SGS-ATES Componenti Elettronici S.p.A. Linear amplifier with distortion correction. 4,268,796, Cl. 330-267.000.

Palmer, Richard F., to Phillips Petroleum Company. Addition of monomer in production of liquid polymers. 4,268,705, Cl. 585-429.000.

Palmquist, Philip V.; and Bradshaw, Thomas I., to Minnesota Mining and Manufacturing Company. Sheeting useful as a projection screen. 4,268,118, Cl. 350-128.000.

Pantec S.r.l.: *See—*
Peccenini, Paolo; and Romini, Paolo, 4,268,574, Cl. 428-315.000.

Paquette, James P., to Berlyn Corporation, The. Leak proof filter plate system for slide plate filters. 4,268,391, Cl. 210-236.000.

Park, Dong-Sil; and Navias, Louis, to General Electric Company. Sodium resistant sealing glasses. 4,268,313, Cl. 106-54.000.

Park Fastener Company: *See—*
Bloomfield, Roger D., 4,267,876, Cl. 160-392.000.

Parke, Davis & Company: *See—*
Von Wattenwyl, Andre R., 4,268,265, Cl. 8-438.000.

Parmet, Bernard S., to Motorola, Inc. Universal automotive electronic radio with display for tuning or time information. 4,268,915, Cl. 455-158.000.

Parsons, Donald G.: *See—*
Rauscher, L. Andrew; and Parsons, Donald G., 4,267,827, Cl. 128-1.100.

Paschakarnis, Peter; and Fischer, Wolfgang, to Sachs-Systemtechnik GmbH. Cordless inductive flat iron apparatus. 4,268,737, Cl. 219-10.49R.

Patel, Pradeep V., to B. F. Goodrich Company, The. Inhibiting polymerization in extractive distillation of C-4 hydrocarbons using alkoxynitrile-containing solvent. 4,268,361, Cl. 203-9.000.

Patel, Ramesh N.; Hou, Ching-Tsang; and Laskin, Allen I., to Exxon Research & Engineering Co. Microbiological production of ketones from C_3–C_6 alkanes. 4,268,630, Cl. 435-148.000.

Patience, Donald: *See—*
Fitzgerald, Harry G.; and Patience, Donald, 4,268,340, Cl. 156-296.000.

Patin, Pierre; and Plagne, Jean, to Regie Autonome des Transports Parisiens. Chain with a single direction of curvature and application to a handrail. 4,267,922, Cl. 198-851.000.

Patzer, Helmut: *See—*
Bauer, Walter; Fabricius, Emilio; Lanzerath, Gunther; Patzer, Helmut; and Vogele, Richard, 4,267,912, Cl. 192-53.00F.

Paul, Jill H., to Mobil Oil Corporation. Amidoximether insecticides. 4,268,525, Cl. 424-326.000.

Paull, Sheldon A. Device for setting-up a baseball diamond. 4,267,637, Cl. 33-1.00G.

Pavlicek, Cleone J., to Miles Laboratories, Inc. Remotely operable lid for storage bins. 4,267,936, Cl. 220-262.000.

Pavlov, Vladimir V.: *See—*
Zolotenko, Vladimir A.; Pavlov, Vladimir V.; Sokolov, Viktor E.; and Syromyatnikov, Alexei N., 4,268,795, Cl. 350-9.000.

Pearce, Robert J.: *See—*
Galt, Ronald H. B.; and Pearce, Robert J., 4,268,514, Cl. 424-267.000.

Pearson, Carl R.: *See—*
Wilbur, Robert L.; and Pearson, Carl R., 4,268,248, Cl. 432-62.000.

Peccenini, Paolo; and Romini, Paolo, to Pantec S.r.l. Prefabricated self-supporting panels and manufacture process thereof. 4,268,574, Cl. 428-315.000.

Peddinghaus, Rolf: *See—*
Regenbrecht, Ludwig, 4,268,195, Cl. 408-16.000.

Pedrotty, Doulas G., to Minnesota Mining and Manufacturing Company. Rigid magnetic recording disks lubricated with fluorinated telechelic polyether. 4,268,556, Cl. 428-65.000.

Peille, Jean M. R., to Societe Industrielle de Stratifies. Distribution and calibration system for expanded plastic panel manufacture. 4,268,236, Cl. 425-115.000.

Pellenen, Anatoly P.: *See—*
Vydrin, Vladimir N.; Ageev, Leonid M.; and Pellenen, Anatoly P., 4,267,720, Cl. 72-205.000.

Penelizer Corporation: *See—*
Stone, Eugene M., 4,268,318, Cl. 106-277.000.

Penn Virginia Corporation: *See—*
Klingaman, Richard M.; and Ehrenreich, Leo C., 4,268,320, Cl. 106-288.00B.

Pennington, Keith S.: *See—*
Aviram, Ari; Pennington, Keith S.; and Kuhn, Lawrence, 4,268,368, Cl. 204-181.00C.

Pennwalt Corporation: *See—*
Shaw, Douglas R., 4,268,380, Cl. 209-167.000.

Pennzoil Company: *See—*
Sardisco, John B.; and Drechsel, Erhart K., 4,268,492, Cl. 423-482.000.

Pentel Kabushiki Kaisha: *See—*
Iwata, Masahiro; and Taka, Yuichi, 4,268,411, Cl. 252-316.000.

Pernet, Andre G.: *See—*
Fung, Anthony K. L.; Morrison, Donald E.; and Pernet, Andre G., 4,268,691, Cl. 568-322.000.

Perreault, Arthur W.; and Dupre, Leo H. Load carrying apparatus. 4,268,217, Cl. 414-740.000.
Perrett, Thomas R.; and Carter, Gilbert T., to Synthes AG. Medical device sterilization case. 4,267,939, Cl. 220-318.000.
Perricone, Alphonse C.: *See—*
Lucas, James M.; Perricone, Alphonse C.; and Enright, Dorothy P., 4,268,400, Cl. 252-8.50C.
Persidsky, Maxim D.; and Ling, Nan-Sing, to Institutes of Medical Sciences, The. Apparatus for centrifugal separation of platelet-rich plasma. 4,268,393, Cl. 210-516.000.
Peskin, Samuel. Full view dual-use mirror apparatus. 4,268,121, Cl. 350-306.000.
Peter Paul Electronics: *See—*
Allen, Walter, Jr., 4,268,009, Cl. 251-138.000.
Peters, Gunter. Truck having a load platform and superstructure. 4,268,084, Cl. 296-148.000.
Peters, Robert W., to Greenleaf Corporation. Indexable insert drill. 4,268,198, Cl. 408-186.000.
Peterson Electronic Die Co.: *See—*
Peterson, Everett A., 4,268,338, Cl. 156-251.000.
Peterson, Everett A., to Peterson Electronic Die Co. Method and apparatus for RF sealing of thermoplastic layers. 4,268,338, Cl. 156-251.000.
Peterson, Kenneth P., to International Telephone and Telegraph Corporation. Fiber optic connector using gradient index lenses. 4,268,112, Cl. 350-96.180.
Peterson, Marvin L.: *See—*
Garnett, Donald I.; and Peterson, Marvin L., 4,268,421, Cl. 252-441.000.
Peterson, Richard: *See—*
Hodapp, Gary; Peterson, Richard; and Schulz, Richard, 4,267,767, Cl. 91-404.000.
Petitpas, Jean-Marie L.: *See—*
Verdenne, Serge J. C.; Petitpas, Jean-Marie L.; and Boirin, Jean-Claude A. E., 4,268,202, Cl. 414-39.000.
Petri AG: *See—*
Herold, Horst, 4,267,908, Cl. 192-8.00C.
Herold, Horst, 4,267,909, Cl. 192-8.00C.
Pez, Guido P.; and Grey, Roger A., to Allied Chemical Corporation. Anionic group VIII metal hydride catalysts. 4,268,454, Cl. 260-439.00R.
Pfaender, Lawrence V., to Owens-Illinois, Inc. Method and apparatus for manufacture of glass film. 4,268,296, Cl. 65-90.000.
Pfeiffer, Horst, to J. Hengstler K.G. Counting-down counter. 4,268,743, Cl. 235-130.00R.
Pfeiffer, Peter; and Tomforde, Johann, to Daimler-Benz Aktiengesellschaft. Diffusion lens for rear lights of vehicles, especially motor vehicles. 4,268,892, Cl. 362-83.000.
Pfizer Inc.: *See—*
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,268,523, Cl. 424-308.000.
Althuis, Thomas H.; Harbert, Charles A.; Johnson, Michael R.; and Melvin, Lawrence S., Jr., 4,268,692, Cl. 568-326.000.
Eggler, James F.; and Hess, Hans-Jurgen E., 4,268,522, Cl. 424-305.000.
Lombardino, Joseph G.; Otterness, Ivan G.; and Muren, James F., 4,268,516, Cl. 424-273.00P.
Philip A.D. Machine, Inc.: *See—*
Wierenga, Allen J., 4,268,038, Cl. 273-416.000.
Philip A. Hunt Chemical Corp.: *See—*
Klavan, Irving L.; Calabrese, Peter J.; Finch, Theron R.; Greenberg, Arthur; and McElroy, Robert P., 4,268,597, Cl. 430-102.000.
Phillips Petroleum Company: *See—*
Bertus, Brent J.; McKay, Dwight L.; and Roberts, John S., 4,268,188, Cl. 405-128.000.
Box, E. O., Jr.; and Farha, Floyd E., Jr., 4,268,399, Cl. 210-762.000.
Ganaway, Franklin D., 4,268,784, Cl. 318-610.000.
Murtha, Timothy P.; and Zuech, Ernest A., 4,268,699, Cl. 585-268.000.
Palmer, Richard F., 4,268,705, Cl. 585-429.000.
Young, Jerry W., 4,268,342, Cl. 156-357.000.
Phillips, Reed E. Plant soil moisture level-signaling device for household and commercial use. 4,268,824, Cl. 340-604.000.
Picker Corporation: *See—*
Shinozaki, Tamotsu; Gallant, Thomas E.; Deane, Robert S. D.; and Cunningham, Daniel, 4,267,641, Cl. 33-365.000.
Pieri, Giampiero; Rosati, Enzo; Battisti, Ruggero; and Burei, Giovanni, to Aziende Colori Nazionali Affini Acna S.p.A. Process for preparing diazonium salts of 3-amino-pyrazole. 4,268,436, Cl. 260-141.000.
Pike, Carl A.; and Hixson, J. Ellsworth. Disc reel mower and method and means of manufacturing the same. 4,267,690, Cl. 56-294.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, to AB Akerlund & Rausing. Tear opening device for containers. 4,267,937, Cl. 220-267.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, to AB Akerlund & Rausing. Method of manufacturing containers. 4,268,336, Cl. 156-244.130.
Pinkham, Carlos F. A.: *See—*
Wallace, Volney; and Pinkham, Carlos F. A., 4,267,665, Cl. 47-26.000.
Pioneer Electronic Corporation: *See—*
Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, 4,268,653, Cl. 526-255.000.
Pipes, George R., to Eaton Corporation. Load support and shuttle. 4,268,207, Cl. 414-277.000.
Pitney Bowes, Inc.: *See—*
Russell, John J., Jr., 4,268,599, Cl. 430-108.000.
Plagne, Jean: *See—*
Patin, Pierre; and Plagne, Jean, 4,267,922, Cl. 198-851.000.
Plaisted, Richard E., to Gillette Company, The. Hair curling device. 4,267,851, Cl. 132-33.00R.
Plantard, Dominique: *See—*
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,268,293, Cl. 65-5.000.
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Tri/penta/aza-tetracyclo-dodeca/enes/dienes or-decaenes. 4,268,300, Cl. 71-76.000.
Plessey Peripheral Systems: *See—*
Veale, John R., 4,268,177, Cl. 400-55.000.
Polakowski, Ted D., Jr.: *See—*
Beckenbaugh, William M.; Goldman, Patricia J.; and Polakowski, Ted D., Jr., 4,268,536, Cl. 427-54.100.
Polaner, Mardy, to Barbron Corporation. Flame arresting air filter element. 4,268,289, Cl. 55-486.000.
Polaroid Corporation: *See—*
Coppa, Richard J.; Ellin, Seymour; and Stempeck, John W., 4,268,138, Cl. 354-27.000.
Johnson, Bruce K., 4,268,146, Cl. 354-145.000.
Reynard, John M., 4,268,142, Cl. 354-86.000.
Polischuk-Sawtschenko, Alexander: *See—*
Kekas, Dennis H.; McAdams, Ronald P.; and Polischuk-Sawtschenko, Alexander, 4,268,100, Cl. 339-17.0LM.
Polzhofer, Kurt: *See—*
Seidel, Hartmut; and Polzhofer, Kurt, 4,268,639, Cl. 525-303.000.
Pope, Clarence. Expandable burglar proof window. 4,267,874, Cl. 160-92.000.
Porter, Marion G.; Norman, Robert W., Jr.; and Flynn, Richard T., to Honeywell Information Systems Inc. Cache unit bypass apparatus. 4,268,907, Cl. 364-200.000.
Post Office, The: *See—*
Groves, Ian S.; Guard, David R.; and Whalley, Steven, 4,268,716, Cl. 179-1.0CN.
Poulos, Andrew C.; and Hightower, John D., to American Cyanamid Company. Selective flocculation for increased coal recovery by froth flotation. 4,268,379, Cl. 209-5.000.
Powell, James; Hsieh, Shih-Yung; and Lehner, John R., to United States of America, Energy. Demountable externally anchored low-stress magnet system and related method. 4,268,353, Cl. 176-3.000.
Powers, John V.: *See—*
Ahn, Kie Y.; Bajorek, Christopher H.; Ho, Paul S.; Miller, Robert J.; and Powers, John V., 4,268,584, Cl. 428-620.000.
Powers, Richard J. Pallet and post construction therefor. 4,267,781, Cl. 108-56.100.
Pozdnyakov, Anatoly M.: *See—*
Koshkin, Lev N.; Semenov, Valery M.; Repin, Jury A.; Pozdnyakov, Anatoly M.; and Lutskov, Nikolai Z., 4,268,243, Cl. 425-575.000.
PPG Industries, Inc.: *See—*
Fahey, Dennis M., 4,268,577, Cl. 428-394.000.
Keim, William A.; and Cook, James A., Jr., 4,268,456, Cl. 260-455.00R.
Lavanish, Jerome M., 4,268,675, Cl. 548-137.000.
Lavanish, Jerome M., 4,268,679, Cl. 548-247.000.
Preload Technology, Inc.: *See—*
Marchaj, Tadeusz J., 4,267,676, Cl. 52-167.000.
Prewo, Karl M.: *See—*
Bacon, James F.; and Prewo, Karl M., 4,268,562, Cl. 428-113.000.
Price, Charles A., to United States Steel Corporation. Preventing the overcharging of coke ovens. 4,268,218, Cl. 414-786.000.
Price, Herbert S.; and Hunter, Glen E., to Texasgulf Inc. Shortwall mining of trona. 4,268,088, Cl. 299-11.000.
Procter & Gamble Company, The: *See—*
Flautt, Thomas J., Jr.; Maguire, Edward J., Jr.; and Richardson, David L., 4,268,738, Cl. 219-10.55F.
Gibson, Thomas W., 4,268,697, Cl. 568-911.000.
O'Brien, Thomas P.; and Benjamin, Lawrence, 4,268,406, Cl. 252-105.000.
Proffitt, William P.: *See—*
Johnston, Thomas F., Jr.; and Proffitt, William P., 4,268,800, Cl. 331-94.50C.
Proudfoot, Clare B., to Sherwin-Williams Company, The. Field test method for estimation of concentration of organic materials in water. 4,268,269, Cl. 23-230.00M.
Pruett, Earl M. Single hand-operated dual brake actuator. 4,267,746, Cl. 74-489.000.
Pulido, Miguel L.: *See—*
Buckman, Robert H.; Young, Peter J.; and Pulido, Miguel L., 4,268,403, Cl. 252-8.55D.
Purdy, Robert W.; and Arneson, Don A., to SBR Lab Inc. Blood collection monitoring device and method. 4,267,837, Cl. 128-275.000.
Purex Corporation: *See—*
Wade, Charles E., 4,267,940, Cl. 220-321.000.
Pyrenco, Inc.: *See—*
Chittick, Donald E., 4,268,275, Cl. 48-111.000.
Quate, Calvin F., to Stanford University Board of Trustees. Acoustic microscope and method. 4,267,732, Cl. 73-606.000.
Quesnel, Raymond: *See—*
Maurice, Jean; and Quesnel, Raymond, 4,267,883, Cl. 165-129.000.

Quist, Bo T.: *See*—
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,267,937, Cl. 220-267.000.
Piltz, Lars-Eric; Quist, Bo T.; Kiellarson, Folke; Mansson, Siwer; and Nilsson, Bengt, 4,268,336, Cl. 156-244.130.

Racki, Francis R.: *See*—
Kmonk, Stanley; Alder, John L.; and Racki, Francis R., 4,268,356, Cl. 176-78.000.

Radici, Pierino; Custro, Sergio; and Colombo, Paolo, to Societa Italiana Resine S.I.R. S.p.A. Process for improving the stability of acetal polymers. 4,268,643, Cl. 525-400.000.

Raftis, Spiros G.; and Schneider, Lawrence L., to Red Valve Company, Inc. Pinch valve. 4,268,005, Cl. 251-5.000.

Raible, Donald A., to Bentley Laboratories, Inc. Blood oxygenator. 4,268,476, Cl. 422-46.000.

Railroad Concrete Crosstie Corporation: *See*—
Hales, Harvey E.; and Fredrick, Edmund R., 4,267,969, Cl. 238-8.000.

Ramage, Alfred B.: *See*—
Gillis, Clifford J.; and Ramage, Alfred B., 4,268,255, Cl. 434-128.000.

Rammler, Roland; Dreher, Ingo; and Rudisch, Rainer, to Metallgesellschaft Aktiengesellschaft. Method for cooling dustlike or fine-grained solids. 4,268,359, Cl. 201-31.000.

Ranco Incorporated: *See*—
Houk, William J., 4,267,702, Cl. 62-115.000.

Randall, Ross D., to Cameron Iron Works, Inc. Stud tensioner for blowout preventer. 4,268,011, Cl. 254-29.00A.

Randolph, Travis M.; and Newhouse, Thomas J., to Herman Miller, Inc. Filler insert for a wall baseboard assembly in a space divider system. 4,267,677, Cl. 52-242.000.

Rank Organisation Limited, The: *See*—
Millward, John D., 4,268,865, Cl. 358-216.000.

Rapp, Walter W.; and Crosby, Gary A., to Red Fox Industries Inc. Sewage treatment. 4,268,389, Cl. 210-195.300.

Rasberger, Michael: *See*—
Leppard, David G.; and Rasberger, Michael, 4,268,593, Cl. 430-17.000.

Rasche, Peter: *See*—
Harnisch, Horst; and Rasche, Peter, 4,268,668, Cl. 8-685.000.

Raspet, Thomas M., to Ciba-Geigy Corporation. Solid cyanuric chloride handling improvements with tricalcium phosphate. 4,268,408, Cl. 252-182.000.

Ratajczak, Hans-Josef: *See*—
Franz, Gerhard; Nierlich, Franz; and Ratajczak, Hans-Josef, 4,268,448, Cl. 260-346.750.

Rathe, Eric J.: *See*—
Schupbach, Hans-Rudolf; and Rathe, Eric J., 4,267,902, Cl. 188-62.000.

Rauch, August H.: *See*—
Bower, Richard K.; Rauch, August H.; and Richard, John F., 4,268,473, Cl. 264-234.000.

Rauchut, Robert F.; and Caparoni, Louis J., to ICI Americas Inc. Protective electrical system for providing indications of removal of objects from plural monitored locations by use of parallel-connected object-sensors. 4,268,823, Cl. 340-570.000.

Rauscher, L. Andrew; and Parsons, Donald G., to Univ. of California, The Regents of the. Ventilator apparatus for life-support and lung scan. 4,267,827, Cl. 128-1.100.

Ray-Chaudhuri, Dilip K.; Chiao, Wen B.; and Schoenberg, Jules E., to National Starch and Chemical Corporation. Co-curing agents for epoxy resins. 4,268,656, Cl. 528-103.000.

Raychem Corporation: *See*—
Jervis, James E., 4,268,329, Cl. 156-51.000.

Rayl, Layton L. Lightweight insulating structural concrete. 4,268,317, Cl. 106-98.000.

Raymond International Builders, Inc.: *See*—
Colle, Ervin R., 4,268,192, Cl. 405-239.000.

Raytheon Company: *See*—
Morrison, Raymond C., 4,268,776, Cl. 313-446.000.

RCA Corporation: *See*—
Goodman, Lawrence A., 4,268,537, Cl. 427-88.000.
Rodgers, Robert L., III, 4,268,866, Cl. 358-228.000.
Wu, Chin T., 4,267,640, Cl. 33-361.000.

Reba, Imants, to Crown Zellerbach Corporation. Liquid distributing apparatus. 4,267,795, Cl. 118-302.000.

Red Fox Industries Inc.: *See*—
Rapp, Walter W.; and Crosby, Gary A., 4,268,389, Cl. 210-195.300.

Red Valve Company, Inc.: *See*—
Raftis, Spiros G.; and Schneider, Lawrence L., 4,268,005, Cl. 251-5.000.

Redington Inc.: *See*—
Vogel, Walter H., 4,267,917, Cl. 198-457.000.

Rees, Herbert; and Schad, Robert D., to Husky Injection Molding Systems. Actuating mechanism for gate valve of injection nozzle. 4,268,240, Cl. 425-548.000.

Rees, Herbert; and Schad, Robert D., to Husky Injection Molding Systems. Heated injection nozzle. 4,268,241, Cl. 425-549.000.

Reese, Max, to Becton Dickinson & Company. Automated direct serum radioassay. 4,268,494, Cl. 424-1.000.

Reeve, James J. Orthodontic appliance. 4,268,250, Cl. 433-20.000.

Regenbrecht, Ludwig, to Peddinghaus, Rolf. Apparatus for making holes in arm sections of structural components. 4,268,195, Cl. 408-16.000.

Regie Autonome des Transports Parisiens: *See*—
Patin, Pierre; and Plagne, Jean, 4,267,922, Cl. 198-851.000.

Regie Nationale des Usines Renault: *See*—
Maurice, Jean; and Quesnel, Raymond, 4,267,883, Cl. 165-129.000.

Reichart, Elwood C., to Motorola, Inc. High performance summing amplifier. 4,268,798, Cl. 330-289.000.

Reichlin, Roland: *See*—
Rutishauser, Thomas; Reichlin, Roland; Viviani, Claudius; and Rutishauser, Albert, 4,268,021, Cl. 271-4.000.

Reid, James A.: *See*—
Fischer, David J.; Wooten, Idella B.; Thomas, John C.; and Reid, James A., 4,268,133, Cl. 351-161.000.

Reid, William W., to British-American Tobacco Company Limited. Tobacco additives. 4,267,847, Cl. 131-275.000.

Reiner, Alberto, to Neopharmed S.p.A. Salicylamide esters and related pharmaceutical composition. 4,268,685, Cl. 560-56.000.

Reiner, Ralph E. Charge feeding and sleeve valve constructions for automatic platen press. 4,267,770, Cl. 100-122.000.

Reinhardt, Bruce A.: *See*—
Arnold, Fred E.; and Reinhardt, Bruce A., 4,268,654, Cl. 526-259.000.

Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, to Institut fur Biomedizinische Technik. Electrolytic process for the sterilization of liquids. 4,268,367, Cl. 204-149.000.

Remers, William A., to University Patents, Inc. Mitomycin analogs. 4,268,676, Cl. 548-181.000.

Remley, Gilbert W.: *See*—
Wassel, William W.; and Remley, Gilbert W., 4,268,354, Cl. 176-19.0EC.

Repeat-O-Type Stencil Manufacturing Co., Inc.: *See*—
Montmarquet, Francis H., Jr., 4,268,576, Cl. 428-342.000.

Repetto, Silvio, to S.p.A. Luigi Rizzi & C. Hydraulic device for producing a to-and-fro movement. 4,267,714, Cl. 69-32.000.

Repin, Jury A.: *See*—
Koshkin, Lev N.; Semenov, Valery M.; Repin, Jury A.; Pozdnyakov, Anatoly M.; and Lutskov, Nikolai Z., 4,268,243, Cl. 425-575.000.

Repromed, Inc.: *See*—
Laufe, Leonard E.; and Wheeler, Robert G., 4,267,839, Cl. 128-303.00A.

Research Corporation: *See*—
Bahl, Om P., 4,268,435, Cl. 260-112.00R.

Rettew, Richard, to Contraves Goerz Corporation. Positioning of an abrasive belt on a grinding machine. 4,267,671, Cl. 51-135.0BT.

Revill, Peter L.: *See*—
Debenham, Michael; Dalli, Allan G.; and Revill, Peter L., 4,267,938, Cl. 220-268.000.

Revlon, Inc.: *See*—
Gedeon, Harvey; Joyce, James F.; and Kellner, David, 4,268,498, Cl. 424-59.000.

Rexnord Inc.: *See*—
Schoenick, Ralph R., 4,267,691, Cl. 59-85.000.
Schrader, Preston H., 4,267,919, Cl. 198-756.000.

Reynard, John M., to Polaroid Corporation. Camera employing web for film ejection and processing. 4,268,142, Cl. 354-86.000.

Rhett, Chester K., to Maul Technology Corporation. Molten glass feeding bowl. 4,268,298, Cl. 65-327.000.

Rhoades, Colin C.: *See*—
Vessey, Rodney W.; and Rhoades, Colin C., 4,267,932, Cl. 212-92.000.
Vessey, Rodney W.; and Rhoades, Colin C., 4,267,933, Cl. 212-108.000.

Rhone-Poulenc Industries: *See*—
Erard, Francois; and Soussan, Salomon, 4,268,651, Cl. 526-65.000.

Richard, John F.: *See*—
Bower, Richard K.; Rauch, August H.; and Richard, John F., 4,268,473, Cl. 264-234.000.

Richards, Lawrence, to GLJ Toy Co., Inc. Inflatable action toy. 4,268,030, Cl. 272-77.000.

Richardson Company, The: *See*—
Muzyczko, Thaddeus M.; and Jones, Thomas H., 4,268,608, Cl. 430-270.000.

Richardson, David L.: *See*—
Flautt, Thomas J., Jr.; Maguire, Edward J., Jr.; and Richardson, David L., 4,268,738, Cl. 219-10.55F.

Richter, Steven I.: *See*—
Stine, Laurence O.; and Richter, Steven I., 4,268,416, Cl. 252-416.000.

Ricoh Company, Ltd.: *See*—
Anderson, Carl P., 4,268,023, Cl. 271-94.000.
Ebi, Yutaka; Hirakura, Koji; Matsumoto, Fuyuhiko; Ohta, Wasaburo; and Tomita, Satoru, 4,268,157, Cl. 355-3.0TR.
Murayoshi, Seizi, 4,268,025, Cl. 271-112.000.
Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, 4,268,596, Cl. 430-72.000.

Rieber, Norbert: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,268,300, Cl. 71-76.000.

Riegel, David P.: *See*—
Longenecker, Ned; Becker, Clair M.; Riegel, David P.; and Vogt, Alan G., Jr., 4,267,721, Cl. 73-1.00G.

Rijckaert, Franciscus N., to B. V. Arenco P.M.B. Method and device for conditioning tobacco leaves or parts thereof in a coil or bobbin. 4,267,848, Cl. 131-304.000.

Ring, Stefan: *See*—
Weber, Robert; Ring, Stefan; and Heeschen, Ulf, 4,268,755, Cl. 250-506.000.

Riou, Claude R.: *See*—
Robillard, Jean J.; and Riou, Claude R., 4,268,600, Cl. 430-142.000.
Rippingille, Edward V., Jr.: *See*—
Kwok, Clyde C. K.; and Suchy, Leszek, 4,267,856, Cl. 137-119.000.
Rist, Bruno A.: *See*—
Tanner, James L.; Rist, Bruno A.; and Sanchez, George, 4,268,805, Cl. 333-129.000.
Rite Hite Corporation: *See*—
Grunewald, Lynn O.; and Hipp, Steven J., 4,267,748, Cl. 74-529.000.
Ritter, Ernst: *See*—
Djordjevic, Ilija; and Ritter, Ernst, 4,267,808, Cl. 123-367.000.
Riverwood Enterprises & Manufacturing, Ltd.: *See*—
MacKenzie, Harold L., 4,268,282, Cl. 55-101.000.
RK Industries: *See*—
Roth, Verlon C., 4,267,861, Cl. 137-625.480.
RKC Corporation: *See*—
Dunagan, Kenneth M., 4,268,619, Cl. 430-398.000.
Roba, Joseph L.: *See*—
Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.
Robert Bosch GmbH: *See*—
Bodig, Bernd; and Jundt, Werner, 4,268,888, Cl. 361-236.000.
Djordjevic, Ilija; and Ritter, Ernst, 4,267,808, Cl. 123-367.000.
Espenschied, Helmut; Kiencke, Uwe; and Schulz, Alfred, 4,267,750, Cl. 74-866.000.
Esper, Friedrich J.; and Wiedenmann, Hans-Martin, 4,268,468, Cl. 264-131.000.
Hohne, Gerd; and Sohner, Gerhard, 4,267,813, Cl. 123-609.000.
Seiler, Hartmut, 4,267,633, Cl. 29-578.000.
Wesemeyer, Jurgen; Haubner, Georg; Meier, Werner; and Schrumpf, Hans, 4,267,810, Cl. 123-416.000.
Roberts, Allen L., to W-K-M Wellhead Systems, Inc. Fluid control means for geothermal wells. 4,268,283, Cl. 55-189.000.
Roberts, John S.: *See*—
Bertus, Brent J.; McKay, Dwight L.; and Roberts, John S., 4,268,188, Cl. 405-128.000.
Robertshaw Controls Company: *See*—
Dykzeul, Theodore J., 4,267,859, Cl. 137-550.000.
Scott, Douglas R., 4,267,968, Cl. 236-49.000.
Robertson, Charles H., Jr.; and Bradley, Mark E. Method and apparatus for measuring pulmonary ventilation. 4,267,845, Cl. 128-721.000.
Robillard, Jean J.; and Riou, Claude R., to Issec and Tissages de Soieries Rennis. Process for photochemically coloring textiles using photosensitive triazene and coupler therefor. 4,268,600, Cl. 430-142.000.
Robinson, Edwin, to Deborah Fluidised Combustion Limited. Circulating fluidized bed boiler. 4,267,801, Cl. 122-4.00D.
Robinson, Lonnie P.: *See*—
Huliba, David A.; and Robinson, Lonnie P., 4,268,836, Cl. 346-75.000.
Roche, William J.; and Sadoski, Tadius T., to GTE Products Corporation. Integrated fluorescent-incandescent lamp assembly. 4,268,780, Cl. 315-179.000.
Rock, John D.; and Garnett, John L., to Unisearch Limited. Radiation cured coating for leather. 4,268,580, Cl. 428-423.400.
Rockwell, Albert M.: *See*—
Barraco, Anthony J.; and Rockwell, Albert M., 4,268,775, Cl. 313-337.000.
Rockwell International Corporation: *See*—
Eshghy, Siavash, 4,267,629, Cl. 29-407.000.
Frankel, Milton B.; and Flanagan, Joseph E., 4,268,450, Cl. 260-349.000.
Marshall, Claude J., Jr., 4,268,091, Cl. 301-37.00R.
Rodgers, Aubrey, to United States of America, Army. Snap-lock mechanism for high-g platform. 4,267,988, Cl. 244-3.160.
Rodgers, Robert L., III, to RCA Corporation. Peak-response controller for average-responding automatic iris. 4,268,866, Cl. 358-228.000.
Roeder, George K. Downhole, hydraulically-actuated pump and cavity having closed power fluid flow. 4,268,227, Cl. 417-358.000.
Rogel, Albert P.; and Scalese, Joseph J., to United States of America, Air Force. Dual trace automatic eddy current detection system for multilayer structures. 4,268,791, Cl. 324-238.000.
Rogemoser, David R.: *See*—
Williams, Roy C.; and Rogemoser, David R., 4,268,426, Cl. 260-22.0TN.
Rogers, Edward J.: *See*—
Evans, David M.; and Rogers, Edward J., 4,268,811, Cl. 337-156.000.
Rogers, Edward R. Water wheel electric generation device. 4,268,757, Cl. 290-53.000.
Rogers, John W. Strip separator and payout apparatus. 4,267,985, Cl. 242-56.400.
Rognmo, Tore: *See*—
Sjotun, Kyrre; and Rognmo, Tore, 4,267,775, Cl. 102-208.000.
Rohm GmbH: *See*—
Fink, Herbert; Suetterlin, Norbert; Dinklage, Horst; and Tilch, Willi, 4,268,549, Cl. 427-393.500.
Rohrbach, Ronald P., to UOP Inc. Support matrices for immobilized enzymes. 4,268,419, Cl. 252-430.000.
Rohrbach, Ronald P.; and Maliarik, Mary, to UOP Inc. Support matrices for immobilized enzymes. 4,268,423, Cl. 252-430.000.
Rohrle, Josef, to Siemens Aktiengesellschaft. Position pickup for numerically controlled machine tools. 4,268,786, Cl. 318-661.000.
Rokas, Gary J., to Sperry Corporation. Bridge-doubler rectifier. 4,268,899, Cl. 363-61.000.
Romeo, Samuel T. System for waste disposal. 4,268,388, Cl. 210-180.000.
Romini, Paolo: *See*—
Peccenini, Paolo; and Romini, Paolo, 4,268,574, Cl. 428-315.000.
Rooker, Mitchel L., to Combustion Engineering, Inc. Multi-tubular centrifugal liquid separator and method of separation. 4,268,277, Cl. 55-1.000.
Roos, Leo, to Hercules Incorporated. Photoresist formulations. 4,268,610, Cl. 430-281.000.
Rosaen, Borje O.; and Fosdick, Dale P. Spin-off filter head assembly. 4,268,384, Cl. 210-133.000.
Rosati, Enzo: *See*—
Pieri, Giampiero; Rosati, Enzo; Battisti, Ruggero; and Burei, Giovanni, 4,268,436, Cl. 260-141.000.
Rose, John B., to Imperial Chemical Industries Limited. Sulphonated polyaryletherketones. 4,268,650, Cl. 525-534.000.
Rose, John B.: *See*—
Hoy, Leslie R. J.; and Rose, John B., 4,268,635, Cl. 525-68.000.
Rose, William H., to AMP Incorporated. Switch encoder. 4,268,728, Cl. 200-16.00R.
Rosendahl, Franz: *See*—
Becker, Heinrich; Klein, Edgar; Rosendahl, Franz; and Weber, Helmut, 4,268,422, Cl. 252-461.000.
Rosenstock, Friedrich: *See*—
Serbent, Harry; Rosenstock, Friedrich; and Kotzschke, Gunter, 4,268,304, Cl. 75-36.000.
Rosenthal, Walter. Composition and method for improving meat production and quality as well as feed utilization by animals. 4,268,493, Cl. 424-1.000.
Roth, Jac M.; and Roth nee Werner, Veronika. Arrangement for registering loads. 4,267,725, Cl. 73-862.650.
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Roth, Jac M.; and Roth nee Werner, Veronika, 4,267,725, Cl. 73-862.650.
Roth, Verlon C., to RK Industries. Plural modular fluid transfer valves. 4,267,861, Cl. 137-625.480.
Roth, Walter L.: *See*—
Farrington, Gregory C.; and Roth, Walter L., 4,268,587, Cl. 429-193.000.
Rowland, Chester A., Jr., to Allis-Chalmers Corporation. Grinding system and method utilizing constant feed rate source. 4,267,981, Cl. 241-30.000.
RP Rorprodukter AB: *See*—
Forssell, Bror I., 4,268,043, Cl. 277-34.000.
Rubin, Albert L.: *See*—
Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,268,131, Cl. 351-160.00H.
Rudisch, Rainer: *See*—
Rammler, Roland; Dreher, Ingo; and Rudisch, Rainer, 4,268,359, Cl. 201-31.000.
Ruehle, Walter J.; and Bronson, Robert E. Adjustable length strap tie down apparatus. 4,268,012, Cl. 254-223.000.
Ruf, Wolfgang: *See*—
Cocron, Istvan; Huber, Theodor; and Ruf, Wolfgang, 4,268,137, Cl. 354-23.00D.
Rupenthal, Leland A.: *See*—
Schantz, Spencer C.; and Rupenthal, Leland A., 4,267,669, Cl. 51-5.00D.
Rush, Kim E., to McCahill, William; and Anderson, Barbara L., part interest to each. Imbalance compensating vehicle wheel attachment. 4,268,090, Cl. 301-5.0BA.
Russell, John J., Jr., to Pitney Bowes, Inc. Treated toner magnetic carrier and method of making the same. 4,268,599, Cl. 430-108.000.
Rustin, Francis: *See*—
Keller, Morris C.; and Rustin, Francis, 4,267,800, Cl. 119-72.500.
Rutgerswerke Aktiengesellschaft: *See*—
Jellinek, Karl; and Muller, Rolf, 4,268,649, Cl. 525-504.000.
Rutishauser, Albert: *See*—
Rutishauser, Thomas; Reichlin, Roland; Viviani, Claudius; and Rutishauser, Albert, 4,268,021, Cl. 271-4.000.
Rutishauser Data AG: *See*—
Rutishauser, Thomas; Reichlin, Roland; Viviani, Claudius; and Rutishauser, Albert, 4,268,021, Cl. 271-4.000.
Rutishauser, Thomas; Reichlin, Roland; Viviani, Claudius; and Rutishauser, Albert, to Rutishauser Data AG. Transportation arrangement for sheetlike recording carriers. 4,268,021, Cl. 271-4.000.
Rypka, Dann B., to Owatonna Manufacturing Company, Inc. Neutral start and centering device for power transmission mechanism. 4,267,804, Cl. 123-179.00K.
S.B.W. Engineers Limited: *See*—
Workman, John, 4,268,772, Cl. 310-197.000.
S&C Electric Company: *See*—
Evans, David M.; and Rogers, Edward J., 4,268,811, Cl. 337-156.000.
S. Franzen Sohne (GmbH & Co.): *See*—
Milles, Peter, 4,267,716, Cl. 70-70.000.
S&S Corrugated Paper Machinery Co. Inc.: *See*—
Huhne, Paul, 4,268,341, Cl. 156-352.000.
Saar, David A., to Black & Decker Inc. Anti-kickback power tool control. 4,267,914, Cl. 192-147.000.
Sachs-Systemtechnik GmbH: *See*—
Paschakarnis, Peter; and Fischer, Wolfgang, 4,268,737, Cl. 219-10.49R.
Sadoski, Tadius T.: *See*—
Roche, William J.; and Sadoski, Tadius T., 4,268,780, Cl. 315-179.000.

Sagami Chemical Research Center: *See*—
Kondo, Kiyosi; Fujimoto, Tamotsu; Suda, Minoru; and Tunemoto, Daiei, 4,268,442, Cl. 260-326.200.

Saint-Gobain Industries: *See*—
Levecque, Marcel, deceased; Levecque, Marc, administrator; Battigelli, Jean A.; and Plantard, Dominique, 4,268,293, Cl. 65-5.000.

Saito, Kazumasa: *See*—
Sawatari, Norio; Watanabe, Isao; Saito, Kazumasa; and Adachi, Katsura, 4,268,433, Cl. 525-193.000.

Saito, Masaaki: *See*—
Ota, Tadaki; Yoshikawa, Katsushi; and Saito, Masaaki, 4,268,462, Cl. 261-40.000.

Saito, Shoichi, to Olympus Optical Co., Ltd. Azimuth adjusting device for magnetic head. 4,268,881, Cl. 360-109.000.

Saitoh, Katsunori: *See*—
Kokaji, Norio; Kinoshita, Kunio; Urano, Toshihiro; and Saitoh, Katsunori, 4,268,872, Cl. 358-301.000.

Sakaguchi, Shinji: *See*—
Yoshida, Takashi; and Sakaguchi, Shinji, 4,268,604, Cl. 430-215.000.

Sakai, Kunitaka; and Ono, Jun, to Honda Giken Kogyo Kabushiki Kaisha. Wind deflector arrangement in sliding roof device for vehicle. 4,268,085, Cl. 296-217.000.

Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Watanabe, Toshiyuki; Watanabe, Susumu; and Matsuda, Tetsuo, to Toyo Jozo Kabushiki Kaisha. Derivatives of antibiotic tylosin. 4,268,665, Cl. 536-17.00R.

Sakakibara, Takao; and Okazaki, Haruhiko, to Dai Nippon Toryo Co., Ltd. Process for forming multi-layer coatings. 4,268,542, Cl. 427-195.000.

Sakamaki, Hisashi: *See*—
Kitamura, Takashi; Sakamaki, Hisashi; and Kawamura, Naoto, 4,268,870, Cl. 358-296.000.

Sakamoto, Hitoshi; and Yamayoshi, Ryuichi, to Sony Corporation. Magnetic reproducing device. 4,268,876, Cl. 360-78.000.

Sakane, Kazuo: *See*—
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, 4,268,509, Cl. 424-246.000.

Sako, Junichi: *See*—
Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, 4,268,653, Cl. 526-255.000.

Sakura, Shigehiko: *See*—
Iwasa, Yoshisuke; and Sakura, Shigehiko, 4,268,810, Cl. 336-205.000.

Salon, Sheppard J.; and Montgomery, Lon W., to Westinghouse Electric Corp. Reverse voltage protection for brushless excitation systems. 4,268,883, Cl. 361-21.000.

Salvador, Thomas R. Shopping cart. 4,268,049, Cl. 280-33.99H.

Samejima, Yasushi: *See*—
Iizima, Tokuzo; Samejima, Yasushi; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,372, Cl. 204-252.000.

Samel, Ulf-Rainer: *See*—
Platz, Rolf; Fuchs, Werner; Rieber, Norbert; Samel, Ulf-Rainer; Jung, Johann; and Wuerzer, Bruno, 4,268,300, Cl. 71-76.000.

Sanchez, George: *See*—
Tanner, James L.; Rist, Bruno A.; and Sanchez, George, 4,268,805, Cl. 333-129.000.

Sanderford, Dorsey W., to Cybar, Inc. Method and apparatus for optimizing production in a continuous or intermittent gas-lift well. 4,267,885, Cl. 166-250.000.

Sanders Associates, Inc.: *See*—
Brodeur, Lester R., 4,268,830, Cl. 343-103.000.

Sanders, Harold D., to Central Welding Supply Co., Inc. Flex head welding torch having disc spring biasing elements. 4,268,740, Cl. 219-137.510.

Sandhu, Mohammad A.: *See*—
Martin, Thomas W.; Sandhu, Mohammad A.; and Savage, Dennis J., 4,267,961, Cl. 250-226.000.

Sanmiya, Tugumi: *See*—
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, 4,268,078, Cl. 293-120.000.
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, 4,268,079, Cl. 293-120.000.

Sano, Takezo; Shimomura, Takatoshi; and Murase, Ichiki, to Sumitomo Chemical Company, Limited. Process for improving semipermeable membranes by treating with protic acids or inorganic salts. 4,268,662, Cl. 528-486.000.

Sard, Richard; and Walton, Kenneth R., to Bell Telephone Laboratories, Incorporated. Lubricated electrical contacts. 4,268,568, Cl. 428-209.000.

Sardisco, John B.; and Drechsel, Erhart K., to Pennzoil Company. Process for production of potassium sulfate and hydrochloric acid. 4,268,492, Cl. 423-482.000.

Sasaki, Masaomi; Hashimoto, Mitsuru; and Kawakami, Tomiko, to Ricoh Company, Ltd. Electrophotographic element having 1,4-bis-(azostyryl)-2,5 dimethoxy benzene compounds as photoconductors. 4,268,596, Cl. 430-72.000.

Sasaki, Tadao, to Sony Corporation. Synchronizing signal detector particularly for use in television AFT. 4,268,862, Cl. 358-153.000.

Sasaki, Takashi: *See*—
Ogi, Keiji; Sasaki, Takashi; Okaniwa, Kenichiro; and Tosaka, Yasuo, 4,268,621, Cl. 430-409.000.

Sasse, Klaus; Beck, Gunther; Eue, Ludwig; and Schmidt, Robert R., to Bayer Aktiengesellschaft. Novel 4,5-dichloro-imidazole derivatives and their use as plant protection agents. 4,268,681, Cl. 548-337.000.

Sato, Hisao. Tags for use with staplers. 4,267,654, Cl. 40-2.00R.

Sato, Takayuki, to Tokyo Ohka Kogyo Kabushiki Kaisha. Photoresist compositions. 4,268,603, Cl. 430-196.000.

Sato, Yasushi: *See*—
Fujii, Motoharu; Koumura, Noboru; Ayata, Naoki; and Sato, Yasushi, 4,268,841, Cl. 346-138.000.

Sato, Yoshio: *See*—
Miyashita, Tsuneo; Sato, Yoshio; and Ando, Yoshitsugu, 4,268,412, Cl. 252-373.000.

Satterfield, Larry S.: *See*—
Brown, Robert S.; and Satterfield, Larry S., 4,267,617, Cl. 15-320.000.

Satterlee, Jesse D. Miniature device for sensing overheating of bearings. 4,268,812, Cl. 337-380.000.

Saunier Duval: *See*—
Charron, Jean-Claude, 4,267,820, Cl. 126-351.000.

Savage, Dennis J.: *See*—
Martin, Thomas W.; Sandhu, Mohammad A.; and Savage, Dennis J., 4,267,961, Cl. 250-226.000.

Saveliev, Igor B.: *See*—
Srapeniants, Rigo A.; Saveliev, Igor B.; Kovtun, Jury L.; Sidorov, Alexandr V.; Tsagolov, Kim S.; and Miroshnikova, Nadezhda N., 4,268,754, Cl. 250-391.000.

Savin Corporation: *See*—
Landa, Benzion, 4,268,178, Cl. 400-118.000.

Sawamura, Norio, both of Osaka: *See*—
Matsuo, Takaharu; Sawamura, Norio, both of Osaka; Hashimoto, Yukio; and Hashida, Wataru, 4,268,527, Cl. 426-33.000.

Sawatari, Norio; Watanabe, Isao; Saito, Kazumasa; and Adachi, Katsura, to Fujitsu Limited. 1,2-Polybutadiene compositions and cured flame retarded 1,2-polybutadiene resin materials. 4,268,433, Cl. 525-193.000.

SBR Lab Inc.: *See*—
Purdy, Robert W.; and Arneson, Don A., 4,267,837, Cl. 128-275.000.

Scalese, Joseph J.: *See*—
Rogel, Albert P.; and Scalese, Joseph J., 4,268,791, Cl. 324-238.000.

Schad, Robert D.: *See*—
Rees, Herbert; and Schad, Robert D., 4,268,240, Cl. 425-548.000.
Rees, Herbert; and Schad, Robert D., 4,268,241, Cl. 425-549.000.

Schafer, Paul; Abel, Heinz; and Mayer, Fritz, to Ciba-Geigy Corporation. Propylene oxide reaction products. 4,268,686, Cl. 560-91.000.

Schank, Richard L.; and Johnson, Gordon E., to Xerox Corporation. Optical recording member. 4,268,840, Cl. 346-135.100.

Schantz, Spencer C.; and Rupenthal, Leland A., to Schantz, Spencer C. Method and apparatus for grinding small cutting blades. 4,267,669, Cl. 51-5.00D.

Schaumberger, Alfred: *See*—
Heller, Arthur; Schaumberger, Alfred; Schuster, Klaus; and Dollinger, Friedrich, 4,268,851, Cl. 358-10.000.

Schefers, Wilhelm: *See*—
Schneider, Rudolf; and Schefers, Wilhelm, 4,267,689, Cl. 56-53.000.

Schering Aktiengesellschaft: *See*—
Burba, Christian; Volland, Hans-Gunter; and Esper, Norbert, 4,268,548, Cl. 427-387.000.

Scherp, Sven; and Ericsson, Sylve J. D., to Svecia Silkscreen Maskiner AB. Silkscreen printing machine. 4,267,773, Cl. 101-123.000.

Schiel, Christian, to J. M. Voith GmbH. Rotatable hollow cylinder, particularly useful as the drying cylinder for a paper machine. 4,267,644, Cl. 34-110.000.

Schierwagen, Alfred W.; and La Mountain, Thomas D., to Templet Industries, Inc. Self-locking louver for lighting fixture. 4,268,897, Cl. 362-325.000.

Schiffer, Rainer: *See*—
Lehnert, Gunther; and Schiffer, Rainer, 4,268,155, Cl. 354-293.000.

Schildkraut, Alan L.; Luca, Vincent A., Jr.; and Knapp, Carl L., to Bendix Corporation, The. Electrical connector assembly having anti-decoupling mechanism. 4,268,103, Cl. 339-89.00M.

Schlumberger Technology Corporation: *See*—
Hoppe, Joachim A., 4,267,727, Cl. 73-151.000.
Noik, Simon P., 4,267,726, Cl. 73-151.000.

Schmadel, Donald; Culver, William H.; and Gould, Gordon, to Optelecom Incorporated. Method and apparatus for radiant energy modulation in optical fibers. 4,268,116, Cl. 350-96.290.

Schmid, Eduard; and Griehl, Wolfgang, to Inventa AG fur Forschung und Patentverwertung, Zurich. Method for the manufacture of glass clear transparent polyamide. 4,268,661, Cl. 528-338.000.

Schmid, Gunter: *See*—
Daur, Rolf; Hoffmann, Herbert; and Schmid, Gunter, 4,268,585, Cl. 428-622.000.

Schmidt, Manfred: *See*—
Biermann, Peter; Feucht, Rudi; and Schmidt, Manfred, 4,268,063, Cl. 280-615.000.

Schmidt, Robert R.: *See*—
Sasse, Klaus; Beck, Gunther; Eue, Ludwig; and Schmidt, Robert R., 4,268,681, Cl. 548-337.000.

Schmitz, Gunter: *See*—
Langlitz, Karlheinz; and Schmitz, Gunter, 4,268,014, Cl. 266-165.000.

Schmuck, Johann, to Motorenfabrik Hatz GmbH & Co. KG. Internal combustion engine. 4,267,805, Cl. 123-198.00E.

Schneider, Eugene S.; and Schneider, Kent A. Kindle maker. 4,268,273, Cl. 44-35.000.

Schneider, Kent A.: *See*—
Schneider, Eugene S.; and Schneider, Kent A., 4,268,273, Cl. 44-35.000.

Schneider, Lawrence L.: *See*—
Raftis, Spiros G.; and Schneider, Lawrence L., 4,268,005, Cl. 251-5.000.
Schneider, Rudolf; and Schefers, Wilhelm, to Busatis-Werke KG. Maize cutter. 4,267,689, Cl. 56-53.000.
Schoenberg, Jules E.: *See*—
Ray-Chaudhuri, Dilip K.; Chiao, Wen B.; and Schoenberg, Jules E., 4,268,656, Cl. 528-103.000.
Schoenick, Ralph R., to Rexnord Inc. Chain having pivot pins also preventing disassembly. 4,267,691, Cl. 59-85.000.
Scholten, Gerard J.: *See*—
Bouwknegt, Jan; Verbeek, Hendrik J.; and Scholten, Gerard J., 4,268,469, Cl. 264-138.000.
Schomburg, Fay G., to Dama, Anthony, a part interest. Play and exercising device. 4,268,031, Cl. 272-128.000.
Schrader, Preston H., to Rexnord Inc. Vibrating spiral conveyor drive. 4,267,919, Cl. 198-756.000.
Schreiber, William F.; and Troxel, Donald E., to Massachusetts Institute of Technology. Image coding. 4,268,861, Cl. 358-138.000.
Schroder, Werner: *See*—
Muhr, Richard; and Schroder, Werner, 4,267,756, Cl. 83-463.000.
Muhr, Richard; and Schroder, Werner, 4,267,758, Cl. 83-571.000.
Schroeder, Dale W., to Westinghouse Electric Corp. Document feed jam detector for a document reading apparatus. 4,268,746, Cl. 250-223.00R.
Schrumpf, Hans: *See*—
Wesemeyer, Jurgen; Haubner, Georg; Meier, Werner; and Schrumpf, Hans, 4,267,810, Cl. 123-416.000.
Schukei, Glen E.: *See*—
Formanek, Frank J.; and Schukei, Glen E., 4,268,357, Cl. 176-78.000.
Schulok, Walter W.: *See*—
Williams, Richard A.; Eydt, Andre J.; Lambert, Charles E.; McGuire, Michael T.; Schulok, Walter W.; and Waitman, Reuben H., 4,268,533, Cl. 426-577.000.
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Hacke, Hans-Juergen; and Hadersbeck, Hans, 4,268,349, Cl. 156-656.000.
Rohrle, Josef, 4,268,786, Cl. 318-661.000.
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Johnson, Stephen C., 4,268,763, Cl. 307-605.000.
Sikora, Orwill G., to Chicago Bridge & Iron Company. Method and apparatus for metal object heat treatment. 4,268,246, Cl. 432-4.000.
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Simjian, Luther G. Check controlled metering device. 4,268,817, Cl. 340-147.00A.
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Sjotun, Kyrre; and Rognmo, Tore, to A/S Kongsberg Vapenfabrikk. Arrangement in ram air turbines. 4,267,775, Cl. 102-208.000.
Skaggs, Kenneth D. Toy hot air balloon. 4,267,989, Cl. 244-31.000.
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Skold, Carl N., to Syva Company. Macromolecular glycosidase substrates. 4,268,663, Cl. 536-4.000.
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Williams, Malcolm, 4,268,885, Cl. 361-45.000.
Slemon, Charles S.; and Braun, Steven W., to Tetra-Tech, Inc. Quick-release fiber-optic connector. 4,268,115, Cl. 350-96.210.
Sloan, Albert H. Electronic control for switching variable speed/variable voltage electric generator. 4,268,787, Cl. 322-8.000.
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Smith, Ernest A. Cigarette holder. 4,267,849, Cl. 131-84.00R.
Smith, Gardner M. Interchangeable shoe. 4,267,649, Cl. 36-101.000.
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Smith, James T., to National Steel Corporation. Method of making nailable steel floor channels. 4,267,954, Cl. 228-173.00D.
Smith, John C., to Fletcher Sutcliffe Wild Limited. Mine roof supports. 4,268,193, Cl. 405-292.000.
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Smith, Norman A.: *See—*
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Smuckler, Jack H., to Electronized Chemicals Corporation. Heat-shrinkable article. 4,268,559, Cl. 428-99.000.
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Baldini, Alberto; Leoni, Roberto; Calloni, Angelo; and Angelini, Gianfranco, 4,268,666, Cl. 536-57.000.
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Radici, Pierino; Custro, Sergio; and Colombo, Paolo, 4,268,643, Cl. 525-400.000.
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Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Colignon, Claude, 4,268,512, Cl. 424-250.000.
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Solomon, Jack, to Esselte Pendaflex Corp. Copy holder. 4,267,656, Cl. 40-352.000.

Sony Corporation: *See—*
Akazawa, Susumu, 4,268,856, Cl. 358-67.000.
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Yamagiwa, Kazuo; Kamakur, Masatoshi; and Numakura, Toshihiko, 4,268,874, Cl. 360-10.000.

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Sorrentino, Vincent P., to Bright Industries Inc. Swinging chaise lounge. 4,268,087, Cl. 297-273.000.

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Spellman, Gordon B.; Schutten, Herman P.; and Jaskolski, Stanley V., to Eaton Corporation. Integrated gate turn-off device with lateral regenerative portion and vertical non-regenerative power portion. 4,268,846, Cl. 357-38.000.

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Spence, Adam M.; and Goff, James R., to Winster Mining Limited. Mounting means for pick on mining drum vane. 4,268,089, Cl. 299-87.000.

Spence, Lewis C. Band-pass filter and gain stage. 4,268,807, Cl. 333-191.000.

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Jacobson, Peter E., 4,267,731, Cl. 73-505.000.
Rokas, Gary J., 4,268,899, Cl. 363-61.000.
Valentino, Pasquale A.; Herper, John C.; and Stangel, John J., 4,268,831, Cl. 343-754.000.
Verdenne, Serge J. C.; Petitpas, Jean-Marie L.; and Boirin, Jean-Claude A. E., 4,268,202, Cl. 414-39.000.

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Gulati, Suresh T.; Smith, Norman A.; and Spycher, Anton A., 4,268,134, Cl. 351-163.000.

Srapeniants, Rigo A.; Saveliev, Igor B.; Kovtun, Jury L.; Sidorov, Alexandr V.; Tsagolov, Kim S.; and Miroshnikova, Nadezhda N. Radioactivation method for simultaneous determination of nitrogen, phosphorus and potassium content in plants and fertilizers. 4,268,754, Cl. 250-391.000.

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Dewaele, Daniel C. C., 4,268,168, Cl. 356-58.000.

Stabilus GmbH: *See—*
Langanke, Rolf, 4,268,018, Cl. 267-120.000.

Standard Oil Company (Indiana): *See—*
Klotz, Marvin R., 4,268,420, Cl. 252-432.000.
Lark, John C., 4,268,645, Cl. 525-437.000.

Stanford University Board of Trustees: *See—*
Quate, Calvin F., 4,267,732, Cl. 73-606.000.

Stangel, John J.: *See—*
Valentino, Pasquale A.; Herper, John C.; and Stangel, John J., 4,268,831, Cl. 343-754.000.

Stanley Works, The: *See—*
Suska, Charles R., 4,267,619, Cl. 16-48.500.

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Stappaerts, Eddy A., to Northrop Corporation. Mode-locked laser using a saturable absorber in a cavity. 4,268,801, Cl. 331-94.5ML.

Staub, Fred W.: *See—*
Lazarek, Gerald M.; and Staub, Fred W., 4,268,850, Cl. 357-82.000.

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Staufer, Adolf, to Fischer Gesellschaft m.b.H. Process and apparatus for forming a profiled tread surface on a ski. 4,268,059, Cl. 280-604.000.

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Fearing, Ralph B., 4,268,633, Cl. 521-168.000.
Teach, Eugene G., 4,268,677, Cl. 548-215.000.

Stearns, Charles F., to United Technologies Corporation. Hydromechanical fuel control with independent electromechanical interface. 4,267,693, Cl. 60-39.28R.

Stedman, Robert N.: *See—*
Chambers, Robert O.; and Stedman, Robert N., 4,267,749, Cl. 74-690.000.

Steelite, Inc.: *See—*
Thompson, Leroy, 4,267,679, Cl. 52-311.000.

Steer, Peter L.; and Edwards, John V., to Kingsdown Medical Consultants Limited. Attachable filter and ostomy bag including same. 4,268,286, Cl. 55-278.000.

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Coppa, Richard J.; Ellin, Seymour; and Stempeck, John W., 4,268,138, Cl. 354-27.000.

Stenning, Charles. Flaw detection probe for cylindrical bores. 4,268,169, Cl. 356-241.000.

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Miyata, Teruo; Rubin, Albert L.; Stenzel, Kurt H.; and Dunn, Michael W., 4,268,131, Cl. 351-160.00H.

Stephens, Richard B., to Exxon Research & Engineering Co. Low reflectivity surface formed by particle track etching. 4,268,347, Cl. 156-628.000.

Sterling Drug Inc.: *See—*
Diana, Guy D.; and Carabateas, Philip M., 4,268,678, Cl. 548-247.000.

Sternberg, James C., to Beckman Instruments, Inc. Method determining concentration in rate nephelometric immunochemical analysis. 4,268,171, Cl. 356-341.000.

Stevens, James N. Method for making a fluid filled ring. 4,268,331, Cl. 156-145.000.

Stewart, James J. Parking lot and highway safety line painting machine. 4,267,973, Cl. 239-73.000.

Stewart, Oscar. Portable display rack and sample carrying case. 4,267,905, Cl. 190-13.00R.

Stewart, Robert D., to Babcock-Brown Boveri Reaktor GmbH. Extraction by solid stabilized emulsions. 4,268,395, Cl. 210-634.000.

Stieff, Lorin R. Field method for detecting deposits containing uranium or thorium. 4,268,748, Cl. 250-255.000.

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Schulze, Ehrhart, 4,268,343, Cl. 156-361.000.

Stine, Laurence O.; and Richter, Steven I., to UOP Inc. Gaseous passivation of metal contaminants on cracking catalyst. 4,268,416, Cl. 252-416.000.

Stirbis, James S., to Coors Container Company. Self-aligning mandrel for can printing machines. 4,267,771, Cl. 101-40.000.

Stocker, Arthur: *See—*
Beck, Edwin; and Stocker, Arthur, 4,268,773, Cl. 310-269.000.

Stockner, Alan R.; and Stratton, Michael K., to Caterpillar Tractor Co. Temperature controlled unit injector. 4,267,977, Cl. 239-132.300.

Stolfo, John J., to Mead Corporation, The. Paper coated with a microcapsular coating composition containing a hydrophobic silica. 4,268,069, Cl. 282-27.500.

Stoltz, Michael: *See—*
Klose, Sigmar; Batz, Hans-Georg; Stoltz, Michael; Hagen, Alexander; and Weimann, Gunter, 4,268,628, Cl. 435-22.000.

Stolz, Robert: *See*—
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; Ernst, Horst M.; Kunkel, Heinrich; Halliger, Leonard; Stolz, Robert; and Schurger, Rainer, 4,267,920, Cl. 198-842.000.
Stone, Eugene M., to Penelizer Corporation. Asphalt and emulsions thereof for pavements. 4,268,318, Cl. 106-277.000.
Stone, Robert D. Integral dome and collar electrical connector. 4,268,101, Cl. 339-61.00R.
Straitz, John F., III, to Combustion Unlimited Incorporated. Offshore-subsea flares. 4,268,245, Cl. 431-202.000.
Strand, Arne: *See*—
Korterod, Lars; Strand, Arne; Ellingsen, Odd; and Broen, Harry, 4,267,929, Cl. 206-603.000.
Stratenhoff, Wolfgang: *See*—
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Stratton, Michael K.: *See*—
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Straub, Immanuel. Pipe coupling for interconnecting pipes experiencing length changes. 4,268,072, Cl. 285-112.000.
Struble, Glenn E., to Diamond International Corporation. Quickly erected scoop-type carton and layout for cutting. 4,267,955, Cl. 229-16.00R.
Suarato, Antonino: *See*—
Masi, Paolo; Suarato, Antonino; Bernardi, Luigi; and Arcamone, Federico, 4,268,451, Cl. 260-376.000.
Subrizi, Angelo; and Violino, Ettore, to Ing. C. Olivetti & C., S.p.A. Variable configuration accounting machine with automatic identification of the number and type of connected peripheral units. 4,268,901, Cl. 364-200.000.
Suchy, Leszek: *See*—
Kwok, Clyde C. K.; and Suchy, Leszek, 4,267,856, Cl. 137-119.000.
Suda, Minoru: *See*—
Kondo, Kiyosi; Fujimoto, Tamotsu; Suda, Minoru; and Tunemoto, Daiei, 4,268,442, Cl. 260-326.200.
Suetterlin, Norbert: *See*—
Fink, Herbert; Suetterlin, Norbert; Dinklage, Horst; and Tilch, Willi, 4,268,549, Cl. 427-393.500.
Suganuma, Tetsuya: *See*—
Serino, Yoichi; Suganuma, Tetsuya; and Takahashi, Yoshitaka, 4,268,309, Cl. 75-230.000.
Sugimoto, Naohiko: *See*—
Sera, Hidefumi; Hori, Kiyotaka; and Sugimoto, Naohiko, 4,268,623, Cl. 430-529.000.
Sugiura, Yoji; and Kiuchi, Masayoshi, to Canon Kabushiki Kaisha. Electromagnetically driven shutter. 4,268,153, Cl. 354-234.000.
Suh, Nam P.; and Erwin, Lewis, II, to Massachusetts Institute of Technology. Method of accelerating the cooling of polymeric articles. 4,268,465, Cl. 264-25.000.
Sullivan, James L. Mud flap assembly. 4,268,052, Cl. 280-153.00R.
Sullivan, Michael O.: *See*—
O'Handley, Robert C.; and Sullivan, Michael O., 4,268,325, Cl. 148-108.000.
Sullivan, Richard D.; and Knies, Allen E., to Kimball International, Inc. Tool safety lock ring. 4,267,759, Cl. 83-665.000.
Sumitomo Bakelite Company Limited: *See*—
Iwasa, Yoshisuke; and Sakura, Shigehiko, 4,268,810, Cl. 336-205.000.
Sumitomo Chemical Company, Limited: *See*—
Sano, Takezo; Shimomura, Takatoshi; and Murase, Ichiki, 4,268,662, Cl. 528-486.000.
Uematsu, Tamon; Hashimoto, Shunichi; and Oshio, Hiromichi, 4,268,301, Cl. 71-90.000.
Sumitomo Electric Industries, Ltd.: *See*—
Kita, Yasuo; and Nishiyama, Yukinori, 4,267,903, Cl. 188-72.600.
Mori, Akinori, 4,268,714, Cl. 174-108.000.
Sumitomo Rubber Industries, Ltd.: *See*—
Kimura, Tamisuke; Kashiwara, Tomokazu; and Yamaguchi, Tetsuo, 4,267,792, Cl. 114-219.000.
Sun Trac Industries, Inc.: *See*—
Winders, Gordon R., 4,268,332, Cl. 156-160.000.
Sung, Pei; Klaus, Irving; and Lee-You, James, to Johnson & Johnson. Dental alloys. 4,268,308, Cl. 75-171.000.
Suovaniemi, Osmo A.; and Tervamaki, Jukka, to Kommandittiyhtio Finnpipette Osmo A. Suovaniemi. Pipette. 4,268,481, Cl. 422-100.000.
Suska, Charles R., to Stanley Works, The. Controlled release door holder. 4,267,619, Cl. 16-48.500.
Sussmuth, Godehard: *See*—
Luhrsen, Ernst; Sussmuth, Godehard; and Walden, Klaus, 4,268,015, Cl. 266-236.000.
Suzuki, Hajime; Masuda, Ikuo; and Kosaka, Masaki, to Daicel Ltd. Primer for powder coating. 4,268,579, Cl. 428-413.000.
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, to Toyota Jidosha Kogyo Kabushiki Kaisha. Passive seatbelt system. 4,268,068, Cl. 280-804.000.
Suzuki, Kazuo; and Yokota, Kenichi, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Ferrite composition having higher initial permeability and process for preparing molding product therefrom. 4,268,430, Cl. 260-37.00R.
Suzuki, Kijiro: *See*—
Ishihara, Haruji; Shimokawa, Ryushi; Yagi, Michio; Shiozawa, Kazuo; Suzuki, Kijiro; and Aratame, Kazuhisa, 4,268,136, Cl. 354-23.00D.
Suzuki, Nobuyuki: *See*—
Aizawa, Hiroshi; Uchidoi, Masanori; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,268,152, Cl. 354-234.000.
Suzuki, Seigo; and Eguchi, Seiji, to Tokyo Shibaura Electric Co., Ltd. Interruption control method for multiprocessor system. 4,268,904, Cl. 364-200.000.
Suzuki, Sumio: *See*—
Imahori, Seiichi; Murata, Yukichi; Maeda, Syuichi; and Suzuki, Sumio, 4,268,671, Cl. 544-245.000.
Suzuki, Tsutomu: *See*—
Aoki, Eiichiro; and Suzuki, Tsutomu, 4,267,762, Cl. 84-1.030.
Suzuki, Yasoji; and Iida, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Interface circuit for converting logic signal levels. 4,268,761, Cl. 307-264.000.
Suzuki, Yasuo: *See*—
Goto, Takeshi; Tanaka, Akio; and Suzuki, Yasuo, 4,267,975, Cl. 239-83.000.
Suzuki, Yoshiaki: *See*—
Hara, Hiroshi; Nakamura, Kotaro; and Suzuki, Yoshiaki, 4,268,605, Cl. 430-216.000.
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Svecia Silkscreen Maskiner AB: *See*—
Scherp, Sven; and Ericsson, Sylve J. D., 4,267,773, Cl. 101-123.000.
Svendsen, Gordon D., to Ampex Corporation. Transient overshoot, undershoot and delay compensation circuit in systems comprising reactive filter networks. 4,268,785, Cl. 318-620.000.
Svoboda, Josef, to TMC Corporation. Ski brake. 4,268,060, Cl. 280-605.000.
Svoboda, Josef, to TMC Corporation. Sole holder. 4,268,064, Cl. 280-625.000.
Sybron Corporation: *See*—
Wolfe, Gerald D., 4,268,394, Cl. 210-525.000.
Symphar S.A.: *See*—
Nguyen Mong, Lan, 4,268,507, Cl. 424-217.000.
Synthes AG: *See*—
Perrett, Thomas R.; and Carter, Gilbert T., 4,267,939, Cl. 220-318.000.
Syromyatnikov, Alexei N.: *See*—
Zolotenko, Vladimir A.; Pavlov, Vladimir V.; Sokolov, Viktor E.; and Syromyatnikov, Alexei N., 4,268,795, Cl. 350-9.000.
Syva Company: *See*—
Skold, Carl N., 4,268,663, Cl. 536-4.000.
Tada, Tsukasa, to VLSI Technology Research Association. Method of patterning a resist layer for manufacture of a semiconductor element. 4,268,607, Cl. 430-270.000.
Taggart, Robert B. Parabolic reflector. 4,268,835, Cl. 343-915.000.
Taira, Akira: *See*—
Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Hara, Shozo; Tanaka, Toshikazu; and Taira, Akira, 4,268,219, Cl. 414-786.000.
Taka, Yuichi: *See*—
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Takagishi, Takaharu: *See*—
Doi, Yasuhiko; Iwao, Soichi; and Takagishi, Takaharu, 4,268,163, Cl. 355-14.0SH.
Takahashi, Hiroshi, to Nippon Electric Co., Ltd. Noise reduction system for color television signal. 4,268,855, Cl. 358-36.000.
Takahashi, Kazuo: *See*—
Iytaka, Tateshi; Matsuo, Syunji; Nagatani, Toshio; Takahashi, Kazuo; and Habu, Takeshi, 4,268,620, Cl. 430-403.000.
Takahashi, Yoshitaka: *See*—
Serino, Yoichi; Suganuma, Tetsuya; and Takahashi, Yoshitaka, 4,268,309, Cl. 75-230.000.
Takamizawa, Yuji: *See*—
Komatsu, Makoto; Ohta, Tazuo; Tanaka, Toru; Oda, Ryoichi; and Takamizawa, Yuji, 4,268,690, Cl. 562-416.000.
Takasugi, Mitsuo; and Okuyama, Yoshio. Boring needle device for treatment of a dental root canal. 4,268,251, Cl. 433-75.000.
Takatori Machinery Works Ltd.: *See*—
Osho, Takatori, 4,267,785, Cl. 112-121.120.
Takeda, Masanobu; and Anzai, Shigeaki, to Denyo Kabushiki Kaisha. A.C. Generator exciting method. 4,268,788, Cl. 322-59.000.
Takeshima, Sadao, to Jidosha Kiki Co. Ltd. Electro-mechanical converters and control apparatus for power steering units utilizing the same. 4,267,897, Cl. 180-143.000.
Takeuchi, Hideaki: *See*—
Ikeda, Tomoaki; Yoshida, Satoshi; Takeuchi, Hideaki; Shinozaki, Fumiaki; and Kido, Keishiro, 4,268,541, Cl. 427-177.000.
Takeuchi, Kunio: *See*—
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, 4,268,464, Cl. 264-22.000.
Taki, Akira: *See*—
Nakamura, Takashi; and Taki, Akira, 4,268,853, Cl. 358-17.000.
Talbott, Gene B. Portable, hand-held device for forming crop-receiving cavities in the ground. 4,267,782, Cl. 111-7.100.
Tamagawa Seiki Kabushiki Kaisha: *See*—
Wakayama, Masashi, 4,268,819, Cl. 340-870.340.
Tamminen, Pentti J., to Imatra Paristo Oy. Cell having improved rechargeability. 4,268,589, Cl. 429-207.000.
Tamura, Yasuyuki: *See*—
Nakahata, Kimio; Aguro, Yoshinori; and Tamura, Yasuyuki, 4,268,161, Cl. 355-3.0CH.
Tanaka, Akio: *See*—
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Miki, Yusaku; Yamamoto, Hidemi; Kimihira, Yuichi; and Tanaka, Akio, 4,268,903, Cl. 364-200.000.
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Tanaka, Shigeho: *See—*
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Tanaka, Toru: *See—*
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Tanaka, Toshikazu: *See—*
Nakagawa, Kazuhiko; Fujieda, Yasuhiko; Hara, Shozo; Tanaka, Toshikazu; and Taira, Akira, 4,268,219, Cl. 414-786.000.
Tanaka, Yoshiyuki, to Nissan Motor Company, Limited. Transmission control device. 4,267,743, Cl. 74-473.0SW.
Tanaka, Yukitaka: *See—*
Kawada, Tsukasa; and Tanaka, Yukitaka, 4,268,534, Cl. 426-607.000.
Tang, David Y.; and Foster, Arthur M., to Hooker Chemicals & Plastics Corp. Method of making methyl and ethyl esters of (3-trifluoromethylphenyl)-acetic acid. 4,268,687, Cl. 560-105.000.
Taniyama, Takashi: *See—*
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Tanner Electronic Systems Technology, Inc.: *See—*
Tanner, James L.; Rist, Bruno A.; and Sanchez, George, 4,268,805, Cl. 333-129.000.
Tanner, James L.; Rist, Bruno A.; and Sanchez, George, to Tanner Electronic Systems Technology, Inc. Citizens band broadcast band coupling circuit. 4,268,805, Cl. 333-129.000.
Tao, Thomas M.: *See—*
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Tarasov, Alexandr E.: *See—*
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Tashiro, Tsuneo, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrographic copying apparatus. 4,268,159, Cl. 355-3.00R.
Tashlick, Irving, to Interpace Corporation. Underground pipe joint with hydratable cement in polyurethane gasket. 4,268,047, Cl. 277-207.00A.
Tata, Peter. Cigarette container and lighter combination. 4,267,924, Cl. 206-87.000.
Taura, Miyako, to Ito, Eiichi; and Taura, Teruchika. Exothermic composition and warming bag containing the same. 4,268,272, Cl. 44-3.00R.
Taura, Teruchika: *See—*
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Taylor, Allen R.: *See—*
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Taylor, Douglas R., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittanic Majesty's Government of the. Portable runway. 4,267,991, Cl. 244-63.000.
Taylor, Edwin E., to Vega Industries, Inc. Damper construction. 4,267,818, Cl. 126-121.000.
Taylor, Michael A.: *See—*
Boyle, Francis T.; and Taylor, Michael A., 4,268,510, Cl. 424-248.530.
Taylor, Raymond G., to Western Electric Company. Circuits and methods for initializing the loop current of a telephone set. 4,268,723, Cl. 179-81.00R.
TDK Electronics Co., Ltd.: *See—*
Fukuda, Kazumasa, 4,268,882, Cl. 360-118.000.
Uemura, Noboru; Hatakeyama, Shunzo; and Hashimoto, Hidehisa, 4,267,986, Cl. 242-199.000.
Teach, Eugene G., to Stauffer Chemical Company. Substituted oxazolidines and thiazolidines. 4,268,677, Cl. 548-215.000.
Teledyne Industries, Inc.: *See—*
Neel, Robert M.; Waite, James B.; and Yoknis, Myron, 4,267,966, Cl. 236-46.00A.
Templet Industries, Inc.: *See—*
Schierwagen, Alfred W.; and La Mountain, Thomas D., 4,268,897, Cl. 362-325.000.
Tenneco Chemicals, Inc.: *See—*
Feldman, Martin L.; and De Groff, James T., 4,268,431, Cl. 260-40.00R.
Teraji, Tsutomu; Sakane, Kazuo; and Goto, Jiro, to Fujisawa Pharmaceutical Co., Ltd. New cephem compounds and processes for preparation thereof. 4,268,509, Cl. 424-246.000.
Teraoka, Akira; and Nakada, Mitsugu, to Kubota, Ltd. Fuel tank mounting structure for a tractor. 4,268,048, Cl. 280-5.00A.
Terry, Alvah B., to Monsanto Company. Fiber bed element and method for making the same. 4,267,626, Cl. 29-163.50F.
Terumo Corporation: *See—*
Aoyagi, Juuro; and Ichikawa, Toshizi, 4,268,463, Cl. 264-22.000.
Tervamaki, Jukka: *See—*
Suovaniemi, Osmo A.; and Tervamaki, Jukka, 4,268,481, Cl. 422-100.000.
Teshima, Hiroshi: *See—*
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Mitsuyama, Yoshiaki; and Tanaka, Shigeho, 4,267,734, Cl. 73-650.000.
Teshima, Tunehiko: *See—*
Kobori, Yasunori; Itoh, Toshi; Tokunaga, Yoichi; and Teshima, Tunehiko, 4,268,873, Cl. 360-9.000.
Tesson, Prosper A. Pipe handling method and apparatus. 4,268,190, Cl. 405-169.000.
Tetra Pak International AB: *See—*
Holmstrom, Sven N. H., 4,267,957, Cl. 229-37.00R.
Tetra-Tech, Inc.: *See—*
Slemon, Charles S.; and Braun, Steven W., 4,268,115, Cl. 350-96.210.
Texaco Development Corp.: *See—*
Knifton, John F., 4,268,689, Cl. 560-263.000.
Texaco Inc.: *See—*
Kalfoglou, George, 4,267,886, Cl. 166-273.000.
Texas Instruments Incorporated: *See—*
Blaha, Robert F., 4,267,635, Cl. 29-622.000.
Henrion, W. S.; and Erickson, Raymond K., 4,268,814, Cl. 338-32.00H.
Texasgulf Inc.: *See—*
Price, Herbert S.; and Hunter, Glen E., 4,268,088, Cl. 299-11.000.
Textron, Inc.: *See—*
Moertel, George B., 4,268,474, Cl. 264-252.000.
Williams, Roy C.; and Rogemoser, David R., 4,268,426, Cl. 260-22.0TN.
Thatcher, Gary G. Particulate matter dispensing device. 4,267,946, Cl. 222-345.000.
Thermasol Ltd.: *See—*
Altman, Gilbert; and Bellasalma, Gerard, 4,267,609, Cl. 4-580.000.
Theurer, Josef; and Folser, Karl, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Mobile ballast cleaning machine. 4,267,777, Cl. 104-7.00R.
Thiery, Joachim: *See—*
Reis, August K.; Kirmaier, Norbert L.; Determann, Helmut; Thiery, Joachim; Haker, Rolf; and Kruger, Dietrich, 4,268,367, Cl. 204-149.000.
Thoemel, Frank: *See—*
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Thomas & Betts Corporation: *See—*
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Thomas Gray & Associates, Inc., Division LevelLink: *See—*
Murakami, Eugene T.; and Gray, Thomas A., 4,268,753, Cl. 250-357.000.
Thomas, John C.: *See—*
Fischer, David J.; Wooten, Idella B.; Thomas, John C.; and Reid, James A., 4,268,133, Cl. 351-161.000.
Thomas, Rudy V., to Allied Chemical Corporation. Seat belt tension eliminator. 4,268,067, Cl. 280-802.000.
Thomas, Samuel J.: *See—*
Harris, George M.; and Thomas, Samuel J., 4,268,334, Cl. 156-187.000.
Thominet, Michel; Bulteau, Gerard; Acher, Jacques; and Collignon, Claude, to Societe d'Etudes Scientifiques et Industrielles de l'Ile-de-France. Substituted 2,3-alkylene bis (oxy) benzamides and derivatives and method of preparation. 4,268,512, Cl. 424-250.000.
Thompson, James D.; and Gates, Dennis E. Means and method of manufacturing a high strength bar. 4,268,561, Cl. 428-111.000.
Thompson, Leroy, to Steelite, Inc. Insulated building panel wall construction. 4,267,679, Cl. 52-311.000.
Thomson-CSF: *See—*
Croset, Michel; and Velasco, Gonzalo, 4,268,535, Cl. 427-38.000.
d'Auria, Luigi; and Maillot, Philippe, 4,268,114, Cl. 350-96.200.
Eranian, Armand; Dubois, Jean C.; Couttet, Andre; and Datamanti, Evelyne, 4,268,590, Cl. 430-5.000.
Thul, Fred M.: *See—*
Fritzlen, Jack D.; Thul, Fred M.; and Vogel, Douglas R., 4,268,751, Cl. 250-343.000.
Thuringer, Ferdinand: *See—*
Hartmann, Max; and Thuringer, Ferdinand, 4,267,698, Cl. 60-756.000.
Thurler, James E.: *See—*
Engelmann, Roger F.; and Thurler, James E., 4,268,057, Cl. 280-474.000.
Tiger Manufacturing Company: *See—*
Hayes, John, 4,268,392, Cl. 210-238.000.
Tilch, Willi: *See—*
Fink, Herbert; Suetterlin, Norbert; Dinklage, Horst; and Tilch, Willi, 4,268,549, Cl. 427-393.500.
Timeter Instrument Corp.: *See—*
Longenecker, Ned; Becker, Clair M.; Riegel, David P.; and Vogt, Alan G., Jr., 4,267,721, Cl. 73-1.00G.
Tinker, Harold B.; and Solodar, Arthur J., to Monsanto Company. Asymmetric hydroformylation process. 4,268,688, Cl. 560-177.000.
Tino, Al. Body garment. 4,267,607, Cl. 2-409.000.
TMC Corporation: *See—*
Svoboda, Josef, 4,268,060, Cl. 280-605.000.
Svoboda, Josef, 4,268,064, Cl. 280-625.000.
Wittmann, Heinz, 4,268,062, Cl. 280-611.000.
Tobitani, Hiroshi: *See—*
Tsuzuki, Akira; and Tobitani, Hiroshi, 4,268,360, Cl. 202-270.000.
Toho Gasu Kabushiki Daisha: *See—*
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,267,853, Cl. 137-67.000.

Toimil, Ramon, to Fabriques de Tabac Reunies S.A. Box for smoking articles in the form of cigarettes or the like. 4,267,926, Cl. 206-268.000.

Tokunaga, Tadatsugu; and Fujii, Akira, to Nippon Electric Co., Ltd. Amplitude-limiter. 4,268,760, Cl. 307-562.000.

Tokunaga, Yoichi: *See*—
Kobori, Yasunori; Itoh, Toshi; Tokunaga, Yoichi; and Teshima, Tunehiko, 4,268,873, Cl. 360-9.000.

Tokyo Denshi Kagaku Kabushiki Kaisha: *See*—
Nakayama, Muneo; Nishimura, Toshihiro; Hashimoto, Akira; Nakane, Hisashi; and Kimura, Teruo, 4,268,539, Cl. 427-108.000.

Tokyo Ohka Kogyo Kabushiki Kaisha: *See*—
Sato, Takayuki, 4,268,603, Cl. 430-196.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Honma, Hiroshi, 4,268,180, Cl. 400-124.000.
Kusakabe, Hiromi, 4,268,916, Cl. 455-333.000.
Nagano, Katsumi, 4,268,789, Cl. 323-315.000.
Suzuki, Yasoji; and Iida, Tetsuya, 4,268,761, Cl. 307-264.000.
Tashiro, Tsuneo, 4,268,159, Cl. 355-3.00R.

Tokyo Shibaura Denki Kabusiki Kaisha: *See*—
Miki, Yusaku; Yamamoto, Hidemi; Kimihira, Yuichi; and Tanaka, Akio, 4,268,903, Cl. 364-200.000.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Suzuki, Seigo; and Eguchi, Seiji, 4,268,904, Cl. 364-200.000.

Toland, William G., to Chevron Research Company. Sulfur-based roof shingles. 4,268,572, Cl. 428-281.000.

Tolbert, William R.; Kuo, Mau-Jung; and Feder, Joseph, to Monsanto Company. Production of angiogenic factor by cell culture. 4,268,629, Cl. 435-41.000.

Tomforde, Johann: *See*—
Pfeiffer, Peter; and Tomforde, Johann, 4,268,892, Cl. 362-83.000.

Tomioka, Shouji: *See*—
Horie, Toshio; Tomioka, Shouji; and Mine, Nobuyoshi, 4,268,397, Cl. 210-746.000.

Tomita, Masahiro: *See*—
Kaneko, Dentaro; Onoda, Mamoru; Kimura, Yoshio; Inada, Yutaka; and Tomita, Masahiro, 4,268,303, Cl. 75-34.000.

Tomita, Satoru: *See*—
Ebi, Yutaka; Hirakura, Koji; Matsumoto, Fuyuhiko; Ohta, Wasaburo; and Tomita, Satoru, 4,268,157, Cl. 355-3.0TR.

Tomlinson, Alan D.: *See*—
Hall, Norman; Martin, Alexander; and Tomlinson, Alan D., 4,268,424, Cl. 252-546.000.

Tonteri, Ossi T.: *See*—
Leiponen, Matti O.; and Tonteri, Ossi T., 4,267,877, Cl. 164-155.000.

Toole, Monte M.; and Klein, Raphael, to Atomel Corporation. High-pressure, high-temperature gaseous chemical method for silicon oxidation. 4,268,538, Cl. 427-93.000.

Toppan Printing Co., Ltd.: *See*—
Naganuma, Tsutomu; Hoshi, Hisao; Kumagai, Hiroji; and Yoshida, Kaneki, 4,268,158, Cl. 355-3.00R.

Toppins, Charles R.; Williams, Cecil L.; and Korth, Otto H., to Dempster Systems Inc. Wheel fender assembly. 4,268,053, Cl. 280-154.000.

Toray Industries, Ltd.: *See*—
Yoshino, Tsuneo; and Ohbayashi, Gentaro, 4,268,602, Cl. 430-192.000.

Toray Silicone Company, Ltd.: *See*—
Mine, Katsutoshi; Kubota, Yoshitaka; and Maruyama, Tsuneo, 4,268,452, Cl. 260-37.0SB.

Torck, Bernard: *See*—
Dang Vu, Quang; Juguin, Bernard; Torck, Bernard; and Hellin, Michel, 4,268,700, Cl. 585-302.000.
Dang Vu, Quang; Chauvin, Yves; Gaillard, Jean; Torck, Bernard; and Hellin, Michel, 4,268,701, Cl. 585-329.000.

Tosaka, Yasuo: *See*—
Ogi, Keiji; Sasaki, Takashi; Okaniwa, Kenichiro; and Tosaka, Yasuo, 4,268,621, Cl. 430-409.000.

Toscano, William M., to Helix Technology Corporation. Helium liquefaction plant. 4,267,701, Cl. 62-86.000.

Tournier, Claude. Machine for depilating the skins of slaughtered animals. 4,267,713, Cl. 69-24.000.

Toyama, Tadao: *See*—
Shiba, Keisuke; Toyama, Tadao; and Nakao, Sho, 4,268,609, Cl. 430-271.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Imanaka, Hiroshi; and Kijima, Yoshihiko, 4,268,570, Cl. 428-216.000.
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, 4,268,464, Cl. 264-22.000.

Toyo Jozo Kabushiki Kaisha: *See*—
Sakakibara, Hideo; Fujiwara, Tatsuro; Okegawa, Osamu; Watanabe, Toshiyuki; Watanabe, Susumu; and Matsuda, Tetsuo, 4,268,665, Cl. 536-17.00R.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kanda, Mutsumi; Nakanishi, Kiyoshi; and Motosugi, Katsuhiko, 4,267,806, Cl. 123-287.000.
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, 4,268,078, Cl. 293-120.000.
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, 4,268,079, Cl. 293-120.000.
Serino, Yoichi; Suganuma, Tetsuya; and Takahashi, Yoshitaka, 4,268,309, Cl. 75-230.000.
Suzuki, Ichiro; Ogawa, Hisashi; and Motonami, Masanao, 4,268,068, Cl. 280-804.000.

Trailigaz, Compagnie Generale de l'Ozone: *See*—
Marets, Maurice, 4,268,480, Cl. 422-98.000.

Traino, James C., to Xerox Corporation. Pixel clock for scanner. 4,268,867, Cl. 358-285.000.

Traub, Henry A., to W. S. Shamban & Co. Seal assembly. 4,268,045, Cl. 277-121.000.

Treczka, Leo: *See*—
Spinner, Georg; and Treczka, Leo, 4,268,804, Cl. 333-125.000.

Tremont, Samuel J.; Williamson, Alex N.; and Solodar, Arthur J., to Monsanto Company. Dehydrocoupling of toluene. 4,268,704, Cl. 585-428.000.

Tremont, Samuel J.: *See*—
Williamson, Alex N.; and Tremont, Samuel J., 4,268,703, Cl. 585-428.000.

Tribotech: *See*—
Cain, Earl S.; Carlson, Jerome A.; and Goodrich, George E., 4,268,096, Cl. 308-15.000.

Trio Kabushiki Kaisha: *See*—
Ienaka, Masanori; Wada, Takeshi; Miyamoto, Yukihiko; and Yamada, Tsuneo, 4,268,762, Cl. 307-268.000.

Triumph-Werke Nurnberg A.G.: *See*—
Decker, Herbert, 4,268,181, Cl. 400-208.000.

Trobaugh, Arnold G., to Johnson Controls, Inc. Flow system control with time delay override means. 4,268,383, Cl. 210-103.000.

Troxel, Donald E.: *See*—
Schreiber, William F.; and Troxel, Donald E., 4,268,861, Cl. 358-138.000.

TRW Inc.: *See*—
Crouse, Ronald J.; and Wade, Edward C., 4,268,756, Cl. 250-551.000.
Lui, Kenneth, 4,268,124, Cl. 350-310.000.

Tsagolov, Kim S.: *See*—
Srapeniants, Rigo A.; Saveliev, Igor B.; Kovtun, Jury L.; Sidorov, Alexandr V.; Tsagolov, Kim S.; and Miroshnikova, Nadezhda N., 4,268,754, Cl. 250-391.000.

Tsang, David L.; and Majewicz, Wlodzimierz I., to United Tire & Rubber Co. Limited. Tire curing assembly with improved seal. 4,268,234, Cl. 425-32.000.

Tschopp, Paul, to Ciba-Geigy AG. Material for color photography. 4,268,591, Cl. 430-17.000.

Tschopp, Paul, to Ciba-Geigy AG. Material for color photography. 4,268,592, Cl. 430-17.000.

Tsujimura, Tozaburo, to Yasui Sangyo Co., Ltd. Dual type free-wheel/drive-on vehicle lift. 4,267,901, Cl. 187-8.540.

Tsukahara, Hirokazu; Fuchigami, Mitsuru; and Kagota, Nobuhiro, to Mitsubishi Paper Mills, Ltd. Desensitizer for no-carbon copy paper. 4,268,634, Cl. 525-471.000.

Tsunekawa, Tokuichi: *See*—
Uchiyama, Takashi; Tsunekawa, Tokuichi; and Kiyohara, Takehiko, 4,268,139, Cl. 354-34.000.

Tsuzuki, Akira; and Tobitani, Hiroshi, to Koritsu Machine Industrial Limited. Temporary heat-proof apparatus for use in repairing coke ovens. 4,268,360, Cl. 202-270.000.

Tubefabrikken A/S: *See*—
Korterod, Lars; Strand, Arne; Ellingsen, Odd; and Broen, Harry, 4,267,929, Cl. 206-603.000.

Tunemoto, Daiei: *See*—
Kondo, Kiyosi; Fujimoto, Tamotsu; Suda, Minoru; and Tunemoto, Daiei, 4,268,442, Cl. 260-326.200.

Turcott, Joseph A. Bag holder apparatus. 4,267,996, Cl. 248-97.000.

Turner, Charles D.: *See*—
Green, John R.; and Turner, Charles D., 4,268,111, Cl. 350-70.000.

Turner, Christopher H.: *See*—
Gross, Michael J.; and Turner, Christopher H., 4,268,253, Cl. 433-221.000.

Turner, David M., to Fisons Limited. Method of treating cystitis. 4,268,518, Cl. 424-283.000.

Turner, David M., to Fisons Limited. Method of treating otitis media. 4,268,519, Cl. 424-283.000.

Tuson, Samuel, to Entreprise d'Equipments Mecaniques et Hydraulics. Stand-by service structure for casual off-shore attendance. 4,268,191, Cl. 405-195.000.

Twitchell, Brent L.; and Twitchell, Kendel S. Child transport vehicle. 4,268,054, Cl. 280-242.0WC.

Twitchell, Kendel S.: *See*—
Twitchell, Brent L.; and Twitchell, Kendel S., 4,268,054, Cl. 280-242.0WC.

Tyers, Peter R.: *See*—
Agger, Reginald T.; and Tyers, Peter R., 4,268,646, Cl. 525-440.000.

Tyler Refrigeration Corporation: *See*—
Abraham, Fayez F., 4,267,706, Cl. 62-256.000.

Tyler, Wesley R.: *See*—
Deffeyes, Robert J.; and Tyler, Wesley R., 4,268,302, Cl. 75-0.5AA.

Uchidoi, Masanori: *See*—
Aizawa, Hiroshi; Uchidoi, Masanori; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,268,152, Cl. 354-234.000.

Uchidoi, Masataka; Iwama, Kiyonori; Iwamoto, Tsutomu; Sako, Junichi; and Higashihata, Yoshihide, to Pioneer Electronic Corporation; and Daikin Kogyo Co., Ltd. Process for preparation of a polymeric piezo-electric material and material prepared by said process. 4,268,653, Cl. 526-255.000.

Uchiyama, Takashi; Tsunekawa, Tokuichi; and Kiyohara, Takehiko, to Canon Kabushiki Kaisha. Camera for daylight and flash photography. 4,268,139, Cl. 354-34.000.

Ueda, Shigeo: *See*—
Aramaki, Kuninori; and Ueda, Shigeo, 4,268,186, Cl. 404-6.000.
Uematsu, Tamon; Hashimoto, Shunichi; and Oshio, Hiromichi, to Sumitomo Chemical Company, Limited. 1,4-Benzothiazines. 4,268,301, Cl. 71-90.000.
Uemura, Noboru; Hatakeyama, Shunzo; and Hashimoto, Hidehisa, to TDK Electronics Co., Ltd. Magnetic tape cassette. 4,267,986, Cl. 242-199.000.
Ueno, Tadashi: *See*—
Segawa, Takashi; and Ueno, Tadashi, 4,268,259, Cl. 474-160.000.
Uetake, Toshifumi; and Matsubara, Masaki, to Olympus Optical Co., Ltd. Ocular of large visual field. 4,268,128, Cl. 350-410.000.
Ueyama, Tamotsu; Wada, Yukihiko; Homma, Masaji; Aisawa, Hitoshi; Komatsu, Takayoshi; Shibata, Tatsuhisa; and Kamiyama, Hiroharu, to Hitachi Chemical Company, Ltd. Method of making printed circuit board. 4,268,614, Cl. 430-315.000.
Ulm, Heinz J. Apparatus for fixing sheets on a base. 4,268,000, Cl. 248-467.000.
Ulrich, Urban: *See*—
Domitrovic, Josip; and Ulrich, Urban, 4,268,767, Cl. 310-53.000.
Umemoto, Yoshiro: *See*—
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, 4,268,078, Cl. 293-120.000.
Nomura, Takao; Umemoto, Yoshiro; Mishima, Yasuhiro; and Sanmiya, Tugumi, 4,268,079, Cl. 293-120.000.
Umezawa, Hamao; and Kondo, Shinichi, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Process for the preparation of 1-N-isoseryl- or 1-N-(L-4-amino-2-hydroxybutyryl)-3',4'-dideoxykanamycin B and intermediates thereof. 4,268,664, Cl. 536-10.000.
Unger, Paul. Ski brake. 4,268,061, Cl. 280-605.000.
Union Carbide Corporation: *See*—
Kantz, John F., 4,268,555, Cl. 428-35.000.
Koenig, Harvey S.; and Bryant, George M., 4,268,641, Cl. 525-367.000.
Montgomery, Lionel C., 4,268,314, Cl. 106-65.000.
Union Oil Company of California: *See*—
Mannon, Alfred T., Jr., 4,267,893, Cl. 175-65.000.
Watanabe, David J., 4,267,887, Cl. 166-300.000.
Union Siderurgique du Nord et de l'est de la France: *See*—
Leclerc, Jacques; Cormet, Rene; and Marcus, Guy, 4,268,305, Cl. 75-48.000.
Unisearch Limited: *See*—
Rock, John D.; and Garnett, John L., 4,268,580, Cl. 428-423.400.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittanic Majesty's Government of the: *See*—
Taylor, Douglas R., 4,267,991, Cl. 244-63.000.
United States of America
Air Force: *See*—
Arnold, Fred E.; and Reinhardt, Bruce A., 4,268,654, Cl. 526-259.000.
Bacon, James F.; and Prewo, Karl M., 4,268,562, Cl. 428-113.000.
Rogel, Albert P.; and Scalese, Joseph J., 4,268,791, Cl. 324-238.000.
Army: *See*—
Baurle, Herbert F.; and Masak, Raymond J., 4,268,829, Cl. 343-100.0LE.
Christian, J. Robert; and Mink, James W., 4,268,832, Cl. 343-786.000.
Rodgers, Aubrey, 4,267,988, Cl. 244-3.160.
Sollott, Gilbert P.; Gilbert, Everett E.; and Warman, Maurice, 4,268,696, Cl. 568-931.000.
Energy: *See*—
Powell, James; Hsieh, Shih-Yung; and Lehner, John R., 4,268,353, Cl. 176-3.000.
National Aeronautics and Space Administration: *See*—
Harper, Philip M., Sr., 4,267,992, Cl. 244-103.00R.
Hoffman, Charles A.; Weeton, John W.; and Orth, Norman W., 4,267,953, Cl. 228-118.000.
Navy: *See*—
Meiners, Larry G., 4,268,844, Cl. 357-23.000.
Widmayer, Henry J.; and Cronin, Albert T., 4,268,105, Cl. 339-147.00R.
U.S. Philips Corporation: *See*—
Bouwknegt, Jan; Verbeek, Hendrik J.; and Scholten, Gerard J., 4,268,469, Cl. 264-138.000.
Heller, Arthur; Schaumberger, Alfred; Schuster, Klaus; and Dollinger, Friedrich, 4,268,851, Cl. 358-10.000.
Jacob, Guy M.; and Boulou, Michel, 4,268,842, Cl. 357-17.000.
Overall, Colin D., 4,268,712, Cl. 174-50.630.
van Roosmalen, Johannes H. T., 4,268,777, Cl. 315-1.000.
United States Steel Corporation: *See*—
Box, William A., 4,267,984, Cl. 242-56.400.
Price, Charles A., 4,268,218, Cl. 414-786.000.
United Technologies Corporation: *See*—
Monsarrat, William G.; and Neal, William F., 4,268,221, Cl. 415-116.000.
Stearns, Charles F., 4,267,693, Cl. 60-39.28R.
United Tire & Rubber Co. Limited: *See*—
Tsang, David L.; and Majewicz, Wlodzimierz I., 4,268,234, Cl. 425-32.000.
United Wiring & Manufacturing Co.: *See*—
Evans, Evan J., 4,268,739, Cl. 219-56.100.
Univ. of California, The Regents of the: *See*—
Rauscher, L. Andrew; and Parsons, Donald G., 4,267,827, Cl. 128-1.100.
Universal Pioneer Corporation: *See*—
Araki, Yositugu, 4,268,129, Cl. 350-486.000.
Okano, Takashi, 4,268,745, Cl. 369-44.000.
University of Minnesota, The Regents of the: *See*—
Vince, Robert, 4,268,672, Cl. 544-265.000.
University of Texas System, The: *See*—
Cowart, Ronald W., 4,268,750, Cl. 250-315.100.
University Patents, Inc.: *See*—
Remers, William A., 4,268,676, Cl. 548-181.000.
Uniweld Inc.: *See*—
Hooper, Anthony W., 4,267,982, Cl. 241-257.00R.
Hooper, Anthony W., 4,268,381, Cl. 209-273.000.
UOP Inc.: *See*—
Antos, George J., 4,268,377, Cl. 208-139.000.
Antos, George J., 4,268,706, Cl. 585-430.000.
Antos, George J., 4,268,707, Cl. 585-434.000.
Ginger, Edward A., 4,268,488, Cl. 423-239.00A.
Rohrbach, Ronald P., 4,268,419, Cl. 252-430.000.
Rohrbach, Ronald P.; and Maliarik, Mary, 4,268,423, Cl. 252-430.000.
Stine, Laurence O.; and Richter, Steven I., 4,268,416, Cl. 252-416.000.
Upjohn Company, The: *See*—
Bundy, Gordon L., 4,268,669, Cl. 542-429.000.
Crankshaw, Gary K.; and Erber, Roger A., 4,267,925, Cl. 206-221.000.
Uragaki, Tamotsu; Inoue, Morio; Koike, Susumu; and Iwasa, Hitoo, to Matsushita Electric Industrial Co., Ltd. Method for growing semiconductor epitaxial layers. 4,268,327, Cl. 148-171.000.
Urano, Toshihiro: *See*—
Kokaji, Norio; Kinoshita, Kunio; Urano, Toshihiro; and Saitoh, Katsunori, 4,268,872, Cl. 358-301.000.
Urban, Hermann: *See*—
Stellfox, Samuel K.; and Urban, Hermann, 4,268,204, Cl. 414-139.000.
Urban, Raymond C., to General Electric Company. Process for radiation cured continuous laminates. 4,268,339, Cl. 156-272.000.
Urquhart, Andrew W.: *See*—
Hanneman, Rodney E.; Urquhart, Andrew W.; and Vermilyea, David A., 4,268,586, Cl. 428-661.000.
Urushibara, Kazunobu: *See*—
Aizawa, Hiroshi; Uchidoi, Masanori; Urushibara, Kazunobu; Suzuki, Nobuyuki; and Shimizu, Masami, 4,268,152, Cl. 354-234.000.
USM Corporation: *See*—
Agger, Reginald T.; and Tyers, Peter R., 4,268,646, Cl. 525-440.000.
Marzouki, Taieb; and Schweisser, Bernd, 4,268,553, Cl. 428-34.000.
Vacca, Miguel; and Morris, James C., to Mayfran, Div. of Fischer Industries, Inc. Method and apparatus for removing material from the ends of a rotary air lock. 4,268,205, Cl. 414-219.000.
Valentino, Pasquale A.; Herper, John C.; and Stangel, John J., to Sperry Corporation. Antenna for scanning a limited spatial sector. 4,268,831, Cl. 343-754.000.
Valeron Corporation, The: *See*—
Murray, Robert C., 4,268,783, Cl. 318-565.000.
Valles, Henry; Taylor, Allen R.; and Beneventano, Thomas, to Singer Company, The. Gyro motor control system. 4,267,735, Cl. 74-5.700.
van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating machines. 4,267,891, Cl. 172-28.000.
van Haaften, Henry M. T. Duct system containing a movable plug body. 4,267,857, Cl. 137-119.000.
van Leeuwen, Geertruida C.: *See*—
Akkerman, Antony M.; and van Leeuwen, Geertruida C., 4,268,673, Cl. 546-97.000.
van Nederynen, Gerrit: *See*—
Wallace, William K.; Giardino, David A.; and van Nederynen, Gerrit, 4,267,747, Cl. 74-526.000.
van Roosmalen, Johannes H. T., to U.S. Philips Corporation. Cathode-ray tube. 4,268,777, Cl. 315-1.000.
Vargas, Ovidio; and Herrold, Anne M., to Eli Lilly and Company. Cosmetic cream formulation. 4,268,526, Cl. 424-358.000.
Varian Associates, Inc.: *See*—
Bassan, Benjamin, 4,268,230, Cl. 418-15.000.
Veale, John R., to Plessey Peripheral Systems. Paper thickness adjusting mechanism for impact printer. 4,268,177, Cl. 400-55.000.
Vega Industries, Inc.: *See*—
Taylor, Edwin E., 4,267,818, Cl. 126-121.000.
Velasco, Gonzalo: *See*—
Croset, Michel; and Velasco, Gonzalo, 4,268,535, Cl. 427-38.000.
Verbeek, Hendrik J.: *See*—
Bouwknegt, Jan; Verbeek, Hendrik J.; and Scholten, Gerard J., 4,268,469, Cl. 264-138.000.
Verdenne, Serge J. C.; Petitpas, Jean-Marie L.; and Boirin, Jean-Claude A. E., to Sperry Corporation. Bale wagon. 4,268,202, Cl. 414-39.000.
VerDow, Dennis M., to Anchor Hocking Corporation. High strength cordierite ceramic. 4,268,311, Cl. 106-45.000.
Vereinigte Baubeschlagfabriken Gretsch and Co. GmbH: *See*—
Biermann, Peter; Feucht, Rudi; and Schmidt, Manfred, 4,268,063, Cl. 280-615.000.
Vermilyea, David A.: *See*—
Hanneman, Rodney E.; Urquhart, Andrew W.; and Vermilyea, David A., 4,268,586, Cl. 428-661.000.
Vernay, Henri, to S.A. A C M A G. Telescopically extendible mast crane. 4,267,934, Cl. 212-184.000.

Vessey, Rodney W.; and Rhoades, Colin C. Skyline logging carriage. 4,267,932, Cl. 212-92.000.
Vessey, Rodney W.; and Rhoades, Colin C. Logging carriage. 4,267,933, Cl. 212-108.000.
Vick, Wiley D. Combination spine board and head stabilizer. 4,267,830, Cl. 128-87.00R.
Victor Company of Japan, Ltd.: *See*—
Ozawa, Keiji, 4,268,854, Cl. 358-27.000.
Vidal, Claude A.: *See*—
Barger, Larry N.; McCord, Kenneth R.; and Vidal, Claude A., 4,267,834, Cl. 128-214.00F.
Villar, Luis F., to Servo Corporation of America. Wheel simulator. 4,268,257, Cl. 434-373.000.
Vince, Robert, to University of Minnesota, The Regents of the. Adenosine deaminase resistant antiviral purine nucleosides and method of preparation. 4,268,672, Cl. 544-265.000.
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Niebes, Paul J.; Vincze, Andras B.; Roba, Joseph L.; Lambelin, Georges E.; Matagne, Daniel M.; Hanon, Etienne T.; and Franz, Michel R., 4,268,517, Cl. 424-283.000.
Vinocur, Michael. Eye glass frames. 4,268,130, Cl. 351-121.000.
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Vissers, Hermanus H.; and Mijnders, Gijsbert J., to Multinorm B.V. Mowing device. 4,267,688, Cl. 56-16.400.
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Rutishauser, Thomas; Reichlin, Roland; Viviani, Claudius; and Rutishauser, Albert, 4,268,021, Cl. 271-4.000.
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Hanke, Reinhard; and Jahn, Kornel, 4,268,382, Cl. 209-273.000.
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Fritzlen, Jack D.; Thul, Fred M.; and Vogel, Douglas R., 4,268,751, Cl. 250-343.000.
Vogel, Walter H., to Redington Inc. Article transfer mechanism. 4,267,917, Cl. 198-457.000.
Vogele, Richard: *See*—
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Vogt, Alan G., Jr.: *See*—
Longenecker, Ned; Becker, Clair M.; Riegel, David P.; and Vogt, Alan G., Jr., 4,267,721, Cl. 73-1.00G.
Volland, Hans-Gunter: *See*—
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Von Wattenwyl, Andre R., to Parke, Davis & Company. Natural dyestuffs for gelatine capsules. 4,268,265, Cl. 8-438.000.
Vydrin, Vladimir N.; Ageev, Leonid M.; and Pellenen, Anatoly P. Mill for rolling metal strips. 4,267,720, Cl. 72-205.000.
Vyne, Robert L.: *See*—
Casey, John F.; and Vyne, Robert L., 4,268,848, Cl. 357-60.000.
W-K-M Wellhead Systems, Inc.: *See*—
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Wada, Takeshi: *See*—
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Wade, Charles E., to Purex Corporation. Removable clamp structure for tank sections which at times block said removal. 4,267,940, Cl. 220-321.000.
Wade, Edward C.: *See*—
Crouse, Ronald J.; and Wade, Edward C., 4,268,756, Cl. 250-551.000.
Wagner, Harry H., to Carlisle Corporation. Process for making friction products. 4,268,467, Cl. 264-111.000.
Wagner, Wayne M.; and Winnes, David E., to Donaldson Company, Inc. Muffler assembly. 4,267,899, Cl. 181-272.000.
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Wakabayashi, Hiroshi, to Nippon Kogaku K.K. Motor drive mechanism. 4,268,148, Cl. 354-173.000.
Wakayama, Masashi, to Tamagawa Seiki Kabushiki Kaisha. Synchro motor type instrument. 4,268,819, Cl. 340-870.340.
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Luhrsen, Ernst; Sussmuth, Godehard; and Walden, Klaus, 4,268,015, Cl. 266-236.000.
Walker, Robert G., to Industra Products, Inc. Apparatus for assembling dynamoelectric machine stators. 4,267,719, Cl. 72-122.000.
Wallace Murray Canada Limited: *See*—
Smith, Garth L.; and Whitehead, Gordon, 4,267,760, Cl. 83-835.000.
Wallace, Richard B., to Oakland Corporation, The. Method of applying friction materials to threaded article. 4,268,544, Cl. 427-264.000.
Wallace, Volney; and Pinkham, Carlos F. A. Double walled thermal protective coverings. 4,267,665, Cl. 47-26.000.
Wallace, William K.; Giardino, David A.; and van Nederynen, Gerrit, to Chicago Pneumatic Tool Company. Safety lever. 4,267,747, Cl. 74-526.000.
Walter, Lothar: *See*—
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Warman, Maurice: *See*—
Sollott, Gilbert P.; Gilbert, Everett E.; and Warman, Maurice, 4,268,696, Cl. 568-931.000.
Warner, John R., to Ferry Cap & Set Screw Co., The. Screw fastener with multi-point wrenching head and locking capabilities. 4,267,870, Cl. 411-98.000.
Warner-Lambert Co.: *See*—
Belotta, Anthony S., 4,267,931, Cl. 211-153.000.
Boiarski, Anthony A.; and Luce, Ross G., 4,268,460, Cl. 261-1.000.
Wassel, William W.; and Remley, Gilbert W., to Westinghouse Electric Corp. Nuclear reactor in core flux mapping system. 4,268,354, Cl. 176-19.0EC.
Wasserstrom, Henry, to Alco Foodservice Equipment Company. Beverage dispenser valve arrangement. 4,267,947, Cl. 222-399.000.
Watanabe, David J., to Union Oil Company of California. Method for acidizing high temperature subterranean formations. 4,267,887, Cl. 166-300.000.
Watanabe, Haruhiko: *See*—
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, 4,268,464, Cl. 264-22.000.
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Watanabe, Koichi: *See*—
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Watrous, Robert B., to International Business Machines Corporation. Suspension for air bearing head arm assembly. 4,268,879, Cl. 360-104.000.
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Weary, Robert D. Boat cart for trailers. 4,268,212, Cl. 414-539.000.
Webb, Jimmy L.; and Williams, Joseph B., to General Electric Company. Novel flame retardant polycarbonate compositions. 4,268,429, Cl. 260-37.0PC.
Weber, Helmut: *See*—
Becker, Heinrich; Klein, Edgar; Rosendahl, Franz; and Weber, Helmut, 4,268,422, Cl. 252-461.000.
Weber, Robert; Ring, Stefan; and Heeschen, Ulf, to Kraftwerk Union Aktiengesellschaft. Fuel assembly shipping cask. 4,268,755, Cl. 250-506.000.
Webster, Milo E., to Instrumentation Laboratory Inc. Fluid analyzer. 4,268,479, Cl. 422-68.000.
Wecker, Ferdinand: *See*—
Benteler, Hubertus; Olszewski, Egon; Hansen, Rainer; and Wecker, Ferdinand, 4,267,718, Cl. 72-59.000.
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Wehling, Bernhard; and Bremen, Josef, to Bayer Aktiengesellschaft. Process for the preparation of benzimidazolylbenzofuranes. 4,268,670, Cl. 542-435.000.
Weidler, Erhard A. Tire protector chain. 4,267,871, Cl. 152-189.000.
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Weir, Robert M.: *See*—
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Weirich, James F. Stand. 4,267,998, Cl. 248-165.000.

Weisz, Vera C. Shoe sole with low profile integral spring system. 4,267,648, Cl. 36-28.000.

Weldy, Winfred E., to Hercules Incorporated. Elimination of bloom in [vul-cup] peroxide crosslinked elastomer compounds. 4,268,637, Cl. 525-105.000.

Wellard, Charles L., to American Components Inc. Method for making a chip circuit component. 4,267,634, Cl. 29-620.000.

Wenisch, Franz: *See*—
Kropp, Rudolf; Thoemel, Frank; Nuerrenbach, Axel; Hoffman, Werner; Wenisch, Franz; and Fuchs, Hartwig, 4,268,445, Cl. 260-345.200.

Werther, Joachim; Fuchs, Hugo; Brand, Uwe; and Faulhaber, Friedrich R., to BASF Aktiengesellschaft. Preparation of caprolactam. 4,268,440, Cl. 260-239.30A.

Wesemeyer, Jurgen; Haubner, Georg; Meier, Werner; and Schrumpf, Hans, to Robert Bosch GmbH. Control system for control of repetitive events, e.g. ignition, fuel injection, in internal combustion engines. 4,267,810, Cl. 123-416.000.

West Electric Company, Ltd.: *See*—
Mori, Ryutaro; and Iwamoto, Akira, 4,268,141, Cl. 354-35.000.

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Westbeck, Gunnar A. E. G., 4,267,736, Cl. 74-5.220.

Westerman, William J. Vehicle carrier for collapsible vehicle. 4,268,209, Cl. 414-462.000.

Western Electric Company: *See*—
Taylor, Raymond G., 4,268,723, Cl. 179-81.00R.

Western Electric Company, Inc.: *See*—
Beckenbaugh, William M.; Goldman, Patricia J.; and Polakowski, Ted D., Jr., 4,268,536, Cl. 427-54.100.
Blitchington, Frank H., 4,268,172, Cl. 356-431.000.
Hardesty, Edwin C., 4,268,109, Cl. 339-205.000.

Westfalia Separator Aktiengesellschaft: *See*—
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Westinghouse Electric Corp.: *See*—
Buck, Daniel C.; and Hess, Ricky D., 4,268,797, Cl. 330-277.000.
Hoover, Delmer Q., Jr., 4,268,765, Cl. 310-11.000.
Kmonk, Stanley; Alder, John L.; and Racki, Francis R., 4,268,356, Cl. 176-78.000.
Salon, Sheppard J.; and Montgomery, Lon W., 4,268,883, Cl. 361-21.000.
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Wassel, William W.; and Remley, Gilbert W., 4,268,354, Cl. 176-19.0EC.
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Westman, Erik: *See*—
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Westvaco Corporation: *See*—
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Wheaton, George B. Motorized bicycle conversion apparatus. 4,267,898, Cl. 180-205.000.

Wheeler, Alton D., to KW Research and Development. Image bearing template for instant camera film packs. 4,268,144, Cl. 354-108.000.

Wheeler, Robert G.: *See*—
Laufe, Leonard E.; and Wheeler, Robert G., 4,267,839, Cl. 128-303.00A.

Wheelhouse, Robert W.: *See*—
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Whirlpool Corporation: *See*—
Kretchman, Gerald L.; and Weir, Robert M., 4,268,098, Cl. 312-210.000.

Whitehead, Gordon: *See*—
Smith, Garth L.; and Whitehead, Gordon, 4,267,760, Cl. 83-835.000.

Whiting, Philip C., Jr., to Ludlow Corporation. Condiment package and material for making same. 4,268,531, Cl. 426-126.000.

Whitney, Bruce F.: *See*—
Davis, Murray W.; Diedzic, Matthew J.; Knapp, Robert F.; and Whitney, Bruce F., 4,268,818, Cl. 340-870.380.

Whitney, Douglass G.; and Martin, John K., III. Injection device and method. 4,267,836, Cl. 128-215.000.

Whitney, Thomas A.: *See*—
Langer, Arthur W., Jr.; and Whitney, Thomas A., 4,268,455, Cl. 260-448.00R.

Wick, John B., Jr.; and Norlin, Eric C., to Wick, John B., Jr.; and Norlin, Eric C. Pharmaceutical dispensing cabinet. 4,267,942, Cl. 221-2.000.

Widmann, Dietrich, to Siemens Aktiengesellschaft. Radiation mask for producing structural configurations in photo-sensitive resists by X-ray exposure. 4,268,563, Cl. 428-138.000.

Widmayer, Henry J.; and Cronin, Albert T., to United States of America, Navy. Transient suppression connector. 4,268,105, Cl. 339-147.00R.

Wiedenmann, Hans-Martin: *See*—
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Wiegand, Edgar D.: *See*—
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Wierenga, Allen J., to Philip A.D. Machine, Inc. Accessory for an arrow. 4,268,038, Cl. 273-416.000.

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Wilbur, Robert L.; and Pearson, Carl R., to Wilbur, Lincoln A. Portable preheater. 4,268,248, Cl. 432-62.000.

Wildman, Samuel G.; and Kwanyuen, Prachuab, to Leaf Proteins, Inc. Process for isolation of ribulose 1,5-diphosphate carboxylase from plant leaves. 4,268,632, Cl. 435-232.000.

Wilkie, William V. Overhead conveyor track system. 4,267,778, Cl. 104-94.000.

Williams, Carter P., to Kobe, Inc. Centrifugal separator with rotating pick-up tube. 4,267,964, Cl. 233-21.000.

Williams, Cecil L.: *See*—
Toppins, Charles R.; Williams, Cecil L.; and Korth, Otto H., 4,268,053, Cl. 280-154.000.

Williams, Joseph B.: *See*—
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Williams, Louis B., Jr., to Monsanto Company. Metered finish. 4,268,550, Cl. 427-429.000.

Williams, Malcolm, to Slater Electric Inc. GFI Sensor circuit. 4,268,885, Cl. 361-45.000.

Williams, Richard A.; Eydt, Andre J.; Lambert, Charles E.; McGuire, Michael T.; Schulok, Walter W.; and Waitman, Reuben H., to General Foods Corporation. Quick-set low methoxyl pectin composition. 4,268,533, Cl. 426-577.000.

Williams, Robert M. Explosion suppression system for fire or explosion susceptible enclosure. 4,267,889, Cl. 169-61.000.

Williams, Roy C.; and Rogemoser, David R., to Textron, Inc. Water-dispersible urethane polymers, aqueous polymer dispersions and half-esters useful therein. 4,268,426, Cl. 260-22.0TN.

Williamson, Alex N.; and Tremont, Samuel J., to Monsanto Company. Dehydrocoupling of toluene. 4,268,703, Cl. 585-428.000.

Williamson, Alex N.: *See*—
Tremont, Samuel J.; Williamson, Alex N.; and Solodar, Arthur J., 4,268,704, Cl. 585-428.000.

Willis, Alan W., to Daniel Doncaster & Sons Limited. Stress relief of aluminium rings. 4,268,322, Cl. 148-12.70A.

Willmerding, Gunter, to Metzeler Kautschuk Aktiengesellschaft. Method of producing hollow moulded members. 4,268,475, Cl. 264-315.000.

Wills, Milton H., Jr., to Martin Marietta Corporation. Masonry cement composition. 4,268,316, Cl. 106-97.000.

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Winders, Gordon R., to Sun Trac Industries, Inc. Method of making precision parabolic reflector apparatus. 4,268,332, Cl. 156-160.000.

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Winster Mining Limited: *See*—
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Wittmann, Heinz, to TMC Corporation. Sole support plate. 4,268,062, Cl. 280-611.000.

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Wojnarowski, Robert J.: *See*—
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Wolf, Irving W.: *See*—
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Wolfe, Gerald D., to Sybron Corporation. Beach for the scum trough of a sewage settling tank or the like. 4,268,394, Cl. 210-525.000.

Wolfendale, Peter C. F., to Automatic Systems Laboratories Limited. Rotary displacement capacitive transducers. 4,268,889, Cl. 361-292.000.

Wolters, Hendrik W., to Hawo B.V. Apparatus for manufacturing a tubular body provided with a sealing ring. 4,268,237, Cl. 425-116.000.

Womako Maschinenkonstruktionen GmbH: *See*—
Fabrig, Paul, 4,268,200, Cl. 414-31.000.

Wood, Arthur E. Support device for automotive body parts. 4,268,020, Cl. 269-88.000.

Wood, Kenneth E., to Westinghouse Electric Corp. TV Transmission system for long tow cables. 4,268,858, Cl. 358-86.000.

Wood, William G.: *See*—
Jakubowski, Thomas M.; and Wood, William G., 4,268,323, Cl. 148-15.500.

Woodard, James. Cabinet molding protector. 4,268,097, Cl. 312-137.000.

Wooten, Idella B.: *See*—
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Workman, John, to S.B.W. Engineers Limited. Laminated rotor with cast end windings. 4,268,772, Cl. 310-197.000.

Wu, Chin T., to RCA Corporation. System for ascertaining magnetic field direction. 4,267,640, Cl. 33-361.000.

Wu, Wei-Wha: *See*—
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Wuerzer, Bruno: *See*—
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Wyslotsky, Ihor. Package for sliced comestible. 4,268,530, Cl. 426-121.000.
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Yabata, Hisao, to Ichikawa Press Industries Co., Ltd. Automotive headlight. 4,268,895, Cl. 362-307.000.
Yagi, Michio: *See*—
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Yajima, Tatsuo; and Nakamura, Hiroya, to Konishiroku Photo Industry Co., Ltd. Composite information recording apparatus and original position designating mechanism therefor. 4,268,164, Cl. 355-41.000.
Yamada, Tsuneo: *See*—
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Yamagata, Hisao: *See*—
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Yamagiwa, Kazuo; Kamakur, Masatoshi; and Numakura, Toshihiko, to Sony Corporation. Transducer deflection apparatus for use in a video signal reproducing device. 4,268,874, Cl. 360-10.000.
Yamaguchi, Tetsuo: *See*—
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Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, to Toho Gasu Kabushiki Daisha; and Kabushiki Kaisha Togawa Gomu Seizosho. Self-closing gas pipes and pipe joints. 4,267,853, Cl. 137-67.000.
Yamamori, Takahiro; Iwanaga, Kazuyoshi; and Ohtsuka, Kunio, to Nissan Motor Company, Limited. Clutch drum assembly for automatic power transmission. 4,267,910, Cl. 192-17.00R.
Yamamoto, Hidemi: *See*—
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Yamamoto, Takashi: *See*—
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Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Mitsuyama, Yoshiaki; and Tanaka, Shigeho, 4,267,734, Cl. 73-650.000.
Yamamoto, Toshiharu: *See*—
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; and Kano, Toshiji, 4,268,365, Cl. 204-98.000.
Iijima, Tokuzo; Yamamoto, Toshiharu; Kishimoto, Kazuo; Komabashiri, Takamichi; Kano, Toshiji; and Hisanaga, Akinori, 4,268,373, Cl. 204-252.000.
Yamamoto, Yoshimi: *See*—
Matsuoka, Hideoki; and Yamamoto, Yoshimi, 4,268,816, Cl. 340-52.00E.
Yamamoto, Yuji: *See*—
Shimokawa, Shin-ichi; Yamamoto, Yuji; and Nagai, Hisao, 4,268,638, Cl. 525-263.000.
Yamanaka, Takashi: *See*—
Kurakami, Osamu; Koshimaru, Shigeru; and Yamanaka, Takashi, 4,268,847, Cl. 357-52.000.
Yamanishi, Akio, to Minolta Camera Kabushiki Kaisha. Medical instrument for determining jaundice. 4,267,844, Cl. 128-633.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Konno, Yutaka; and Kawamura, Shigeo, 4,268,501, Cl. 424-80.000.
Yamasaki, Kazuto, to Maeda Industries, Ltd. Bicycle speed change lever. 4,267,744, Cl. 74-475.000.
Yamashita, Keitaro: *See*—
Morio, Minoru; Kambara, Masahiro; Kubota, Yukio; and Yamashita, Keitaro, 4,268,875, Cl. 360-10.000.
Yamashita, Sadahiko: *See*—
Makimoto, Mitsuo; and Yamashita, Sadahiko, 4,268,809, Cl. 333-202.000.
Yamato Scale Company, Limited: *See*—
Hirano, Takashi; and Aga, Takashi, 4,267,894, Cl. 177-25.000.
Yamayoshi, Ryuichi: *See*—
Sakamoto, Hitoshi; and Yamayoshi, Ryuichi, 4,268,876, Cl. 360-78.000.
Yamazaki, Yoshio: *See*—
Kamogawa, Nin-ichi; and Yamazaki, Yoshio, 4,267,796, Cl. 118-658.000.
Yaniger, Christopher J., to AAI Corporation. Arrangement for use in projectile launch simulation. 4,267,764, Cl. 89-25.000.
Yapp, Jack. Timing circuit for air conditioner chiller. 4,267,704, Cl. 62-158.000.
Yasui Sangyo Co., Ltd.: *See*—
Tsujimura, Tozaburo, 4,267,901, Cl. 187-8.540.
Yin-Lung, Yang. Emergency escape system. 4,267,900, Cl. 182-13.000.
Yoknis, Myron: *See*—
Neel, Robert M.; Waite, James B.; and Yoknis, Myron, 4,267,966, Cl. 236-46.00A.
Yokoi, Gunpei, to Nintendo Company Limited. Shooting game apparatus. 4,268,036, Cl. 273-316.000.
Yokota, Kenichi: *See*—
Suzuki, Kazuo; and Yokota, Kenichi, 4,268,430, Cl. 260-37.00R.
Yokota, Tsuneshi; and Ike, Toshio, to Shibaura Denki Kabushiki Kaisha. Beam scanning type electronic copying apparatus. 4,268,868, Cl. 358-286.000.
Yonekura, Kikuo: *See*—
Yamaguchi, Yukio; Ishihara, Kenji; and Yonekura, Kikuo, 4,267,853, Cl. 137-67.000.
Yonezawa, Yoshimichi, to Matsumoto Yushi-Seiyaku Co., Ltd. Method for producing relief. 4,268,615, Cl. 430-320.000.
Yoshibayashi, Shigeru: *See*—
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Noguchi, Kenzo; and Kishikawa, Shinobu, 4,267,733, Cl. 73-650.000.
Shima, Ichiji; Yamamoto, Tatsuo; Yoshibayashi, Shigeru; Teshima, Hiroshi; Hizume, Akio; Iki, Tetsuo; Yamamoto, Takashi; Kanamori, Kyozo; Mitsuyama, Yoshiaki; and Tanaka, Shigeho, 4,267,734, Cl. 73-650.000.
Yoshida, Kaneki: *See*—
Naganuma, Tsutomu; Hoshi, Hisao; Kumagai, Hiroji; and Yoshida, Kaneki, 4,268,158, Cl. 355-3.00R.
Yoshida Kogyo K.K.: *See*—
Akashi, Shunji, 4,267,621, Cl. 24-205.11R.
Yoshida, Satoshi: *See*—
Ikeda, Tomoaki; Yoshida, Satoshi; Takeuchi, Hideaki; Shinozaki, Fumiaki; and Kido, Keishiro, 4,268,541, Cl. 427-177.000.
Yoshida, Syozo: *See*—
Date, Nobuaki; Senuma, Michio; and Yoshida, Syozo, 4,268,147, Cl. 354-147.000.
Yoshida, Takashi; and Sakaguchi, Shinji, to Fuji Photo Film Co., Ltd. Photographic element for color diffusion transfer process. 4,268,604, Cl. 430-215.000.
Yoshida, Yoshinobu: *See*—
Fujita, Shinsaku; Harada, Tooru; and Yoshida, Yoshinobu, 4,268,624, Cl. 430-562.000.
Fujita, Shinsaku; Hayashi, Hidetoshi; Ono, Shigetoshi; Yoshida, Yoshinobu; and Harada, Tooru, 4,268,625, Cl. 430-562.000.
Yoshida, Yoshinori; and Oka, Hiroshi, to Japan Synthetic Rubber Co., Ltd. Process for producing tetrahydrofuran and 1,4-butanediol. 4,268,447, Cl. 260-346.110.
Yoshikawa, Katsushi: *See*—
Ota, Tadaki; Yoshikawa, Katsushi; and Saito, Masaaki, 4,268,462, Cl. 261-40.000.
Yoshikawa, Norihiro, to Dengyosha Engineering Co., Inc. Centrifugal rotating disc assembly for biological waste water treatment apparatus. 4,268,385, Cl. 210-150.000.
Yoshikumi, Chikao; Omura, Yoshio; and Hotta, Tetsuya, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition comprising a nitrogen-containing polysaccharide and an antibiotic agent, and a method of treating an infectious disease therewith. 4,268,505, Cl. 424-180.000.
Yoshino, Tsuneo; and Ohbayashi, Gentaro, to Toray Industries, Ltd. Photosensitive O-quinone diazide containing composition. 4,268,602, Cl. 430-192.000.
Yoshino, Yasutomi; Nishimura, Fumio; Watanabe, Haruhiko; Kobayashi, Masahiro; Takeuchi, Kunio; and Okudaira, Haruo, to Toyo Boseki Kabushiki Kaisha. Electrostatic pinning of extruded polyamide film. 4,268,464, Cl. 264-22.000.
Yoshizaki, Norio: *See*—
Ogawa, Tetsuya; Yoshizaki, Norio; Katsuragi, Tadakatsu; Nakamura, Makoto; and Shiiba, Kiyonori, 4,268,362, Cl. 203-28.000.
Young, Alastair J., to Automotive Products Limited. Hydraulic braking systems. 4,268,092, Cl. 303-22.00R.

Young, Archie R., II: *See*—
Muenker, Adolf H.; and Young, Archie R., II, 4,268,319, Cl. 106-288.00B.
Young, Jerry W., to Phillips Petroleum Company. Apparatus for assembling closures and control systems therefor. 4,268,342, Cl. 156-357.000.
Young, Peter J.: *See*—
Buckman, Robert H.; Young, Peter J.; and Pulido, Miguel L., 4,268,403, Cl. 252-8.55D.
Yuasa, Takeo: *See*—
Ibata, Jyoji; Fukui, Hisaaki; Yuasa, Takeo; and Katoh, Michio, 4,268,337, Cl. 156-244.170.
Yusa, Haruhiko: *See*—
Iizuka, Yo; Yusa, Haruhiko; Midorikawa, Susumu, deceased; and Midorikawa, Taeko, heir, 4,268,636, Cl. 525-85.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; and Kondo, Shinichi, 4,268,664, Cl. 536-10.000.
Zarnoch, Kenneth P.: *See*—
Herrick, Carlyle S.; and Zarnoch, Kenneth P., 4,268,405, Cl. 252-70.000.
Zebra Co., Ltd.: *See*—
Sekiguchi, Kazuhiko, 4,268,183, Cl. 401-30.000.
Zeldman, Maurice I., to Bucyrus-Erie Company. Excavator front end. 4,268,214, Cl. 414-694.000.
Ziegelmeyer, Lynn J. Saw chain depth-grinding apparatus. 4,267,751, Cl. 76-25.00A.
Zimmerman, Franz X.: *See*—
Smith, Charles W., Jr.; and Zimmerman, Franz X., 4,268,708, Cl. 13-20.000.
Zinsmeyer, Thomas M.: *See*—
Leonard, Gary S.; and Zinsmeyer, Thomas M., 4,267,705, Cl. 62-195.000.
Zoli, Theodore P., Jr.: *See*—
Formato, Richard A., 4,267,803, Cl. 123-146.50A.
Zolotenko, Vladimir A.; Pavlov, Vladimir V.; Sokolov, Viktor E.; and Syromyatnikov, Alexei N. Pulsed voltage amplification device with drift correction. 4,268,795, Cl. 350-9.000.
Zuech, Ernest A.: *See*—
Murtha, Timothy P.; and Zuech, Ernest A., 4,268,699, Cl. 585-268.000.
Zurbruggen, Hugo, to Westfalia Separator Aktiengesellschaft. Safety device for centrifugal separator. 4,267,963, Cl. 233-1.00B.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 19TH DAY OF MAY, 1981

NOTE—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Burk, Michael T.: *See*—
Sweany, Louis P.; and Burk, Michael T., Re. 30,620, Cl. 340-629.000.

Butler, David F.; and Hodil, Elmer R., to Olin Mathieson Chemical Corporation. Power actuated tool. Re. 30,617, Cl. 227-8.000.

Decker, Cloyd E., to Robertshaw Controls Company. Control system and method and control device therefor. Re. 30,619, Cl. 219-506.000.

Gillette Company, The: *See*—
Van Dyck, Kenneth A.; Wyatt, James B.; Stephenson, Charles F.; and Miller, Scott W., Re. 30,618, Cl. 219-225.000.

Hayashi, Masataka: *See*—
Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, Re. 30,614, Cl. 57-58.540.

Hodil, Elmer R.: *See*—
Butler, David F.; and Hodil, Elmer R., Re. 30,617, Cl. 227-8.000.

Hofer, Otto, to Interondo AG. Box for ampoules having a packaging insert that provides a closure arrangement and reinforcement. Re. 30,616, Cl. 206-443.000.

Interondo AG: *See*—
Hofer, Otto, Re. 30,616, Cl. 206-443.000.

Itou, Hidehiko: *See*—
Nakamura, Masahiko; and Itou, Hidehiko, Re. 30,613, Cl. 30-94.000.

Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka. Simultaneous multiple twisting apparatus. Re. 30,614, Cl. 57-58.540.

Matsuzaka Iron Works, Inc.: *See*—
Nakamura, Masahiko; and Itou, Hidehiko, Re. 30,613, Cl. 30-94.000.

Miller, Scott W.: *See*—
Van Dyck, Kenneth A.; Wyatt, James B.; Stephenson, Charles F.; and Miller, Scott W., Re. 30,618, Cl. 219-225.000.

Mirtain, Henri J. Pneumatic tire with reinforcing belt that minimizes belt end gyroscopic effect. Re. 30,615, Cl. 152-361.0FP.

Nakamura, Masahiko; and Itou, Hidehiko, to Matsuzaka Iron Works, Inc. Shearing tool for synthetic resin tubes. Re. 30,613, Cl. 30-94.000.

Ogura, Akira: *See*—
Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, Re. 30,614, Cl. 57-58.540.

Olin Mathieson Chemical Corporation: *See*—
Butler, David F.; and Hodil, Elmer R., Re. 30,617, Cl. 227-8.000.

P. R. Mallory & Co. Inc.: *See*—
Sweany, Louis P.; and Burk, Michael T., Re. 30,620, Cl. 340-629.000.

Robertshaw Controls Company: *See*—
Decker, Cloyd E., Re. 30,619, Cl. 219-506.000.

Stephenson, Charles F.: *See*—
Van Dyck, Kenneth A.; Wyatt, James B.; Stephenson, Charles F.; and Miller, Scott W., Re. 30,618, Cl. 219-225.000.

Sweany, Louis P.; and Burk, Michael T., to P. R. Mallory & Co. Inc. High output smoke and heat detector alarm system utilizing a piezoelectric transducer and a voltage doubling means. Re. 30,620, Cl. 340-629.000.

Van Dyck, Kenneth A.; Wyatt, James B.; Stephenson, Charles F.; and Miller, Scott W., to Gillette Company, The. Collapsible portable electric hair curling iron. Re. 30,618, Cl. 219-225.000.

Wyatt, James B.: *See*—
Van Dyck, Kenneth A.; Wyatt, James B.; Stephenson, Charles F.; and Miller, Scott W., Re. 30,618, Cl. 219-225.000.

Yamamura, Tadashi: *See*—
Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, Re. 30,614, Cl. 57-58.540.

LIST OF DESIGN PATENTEES

Abbott, J. Carl, Jr.: *See*—
Howey, John R.; and Abbott, J. Carl, Jr., 259,282, Cl. D25-18.000.

Acker, Stanley. Combined bottle and hang tab. 259,252, 5-19-81, Cl. D9-338.000.

American Home Products Corporation: *See*—
Givner, Morris L.; and Tiffany, Douglas, 259,254, Cl. D10-81.000.

Argante, Louis C. Free roll creeper guard. 259,243, 5-19-81, Cl. D8-375.000.

Autsin-Berryhill Fabricators, Inc.: *See*—
Berryhill, Robert A., 259,275, Cl. D23-94.000.

Baysdon, Donald J. Inspection mirror for automobiles or the like. 259,263, 5-19-81, Cl. D16-48.000.

Berryhill, Robert A., to Autsin-Berryhill Fabricators, Inc. Stove. 259,275, 5-19-81, Cl. D23-94.000.

Bielefelder Elektronik und Apparatebau GmbH: *See*—
Schuldt, Gerhard, 259,264, Cl. D18-4.000.

Black & Decker Inc.: *See*—
Dibbern, John E., Jr.; Somers, Robert I.; Schafebook, Richard A.; and Mitchell, Richard L., 259,235, Cl. D8-66.000.

Blomberg, Knut H. Telephone instrument. 259,260, 5-19-81, Cl. D14-53.000.

Box, Theodor M. Beverage case. 259,294, 5-19-81, Cl. D99-50.000.

Brandt, Hugh J. W.; and Murray, Donald, to J. L. Prescott Co. Bottle. 259,246, 5-19-81, Cl. D9-404.000.

Bretschger, Edward B.; and Routzong, James R., to Louis Marx & Co., Inc. Toy vehicle steering simulation device. 259,269, 5-19-81, Cl. D21-124.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 259,285, 5-19-81, Cl. D30-2.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 259,286, 5-19-81, Cl. D30-2.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 259,287, 5-19-81, Cl. D30-2.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 259,288, 5-19-81, Cl. D30-02.000.

Bunger, Richard E. Flume platform panel for animal confinement pens. 259,289, 5-19-81, Cl. D30-2.000.

Bunger, Richard E. Interlocking bridging platform panel for animal confinement pens. 259,290, 5-19-81, Cl. D30-2.000.

Bunger, Richard E. Interlocking flume platform panel for animal confinement pens. 259,291, 5-19-81, Cl. D30-2.000.

Chacon, Anibal R. Support bracket for a bathroom fixture. 259,227, 5-19-81, Cl. D6-103.000.

Collins, Thomas H.: *See*—
Small, Larry K.; and Collins, Thomas H., 259,220, Cl. D2-400.000.

Conrad, Robert. Fish bowl. 259,292, 5-19-81, Cl. D30-6.000.

Cooper, Herbert. Combined animal litter scooper and container. 259,293, 5-19-81, Cl. D30-99.000.

Coussens, Marie K. Combined cover and seal for tip out unit of a recreational trailer. 259,256, 5-19-81, Cl. D12-106.000.

Daiko Co., Ltd.: *See*—
Takeda, Hidetaka, 259,279, Cl. D24-67.000.

DeClute, Robert G. Spacing pad for floor slabs. 259,283, 5-19-81, Cl. D25-88.000.

DeWitt, F. Carlos. Handcuff key. 259,239, 5-19-81, Cl. D8-347.000.

Dibbern, John E., Jr.; Somers, Robert I.; Schafebook, Richard A.; and Mitchell, Richard L., to Black & Decker Inc. Circular saw. 259,235, 5-19-81, Cl. D8-66.000.

Dobias, John J. Wrench. 259,233, 5-19-81, Cl. D8-21.000.

Driver, Ervin M.: *See*—
Lynch, Paul C.; and Driver, Ervin M., 259,241, Cl. D8-363.000.

Duffey, Thomas E.; and Ulanoff, Claire R., to Riviana Foods Inc. Insect trap or similar article. 259,272, 5-19-81, Cl. D22-19.000.

Fabian, Samuel F. Foldable garment hanger. 259,228, 5-19-81, Cl. D6-124.000.

Forbyn, Richard J. Combined mirror and cleaning device therefor. 259,257, 5-19-81, Cl. D12-188.000.

Gebbia, Richard S. Combined coupon holder, writing instrument and memo pad. 259,221, 5-19-81, Cl. D3-60.000.

Gemvik, Ake O. V. Reinforcing and protector element for the edges of pallet goods. 259,245, 5-19-81, Cl. D8-403.000.

Gilb, Tyrell T., to Simpson Manufacturing Co., Inc. Connector for wood members. 259,242, 5-19-81, Cl. D8-373.000.

Givner, Morris L.; and Tiffany, Douglas, to American Home Products Corporation. Diagnostic test device. 259,254, 5-19-81, Cl. D10-81.000.

Grecol, Paul S., Jr., to National Service Industries, Inc. Cable hanger. 259,244, 5-19-81, Cl. D8-380.000.

Hallerman, Edith O. Exerciser. 259,270, 5-19-81, Cl. D21-198.000.

Heuel, Jeffrey P.; and Palisek, William F., to Interstate Industries, Inc. Electronic baseball game casing. 259,265, 5-19-81, Cl. D21-13.000.
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, to Interstate Industries, Inc. Electronic pinball game housing. 259,266, 5-19-81, Cl. D21-13.000.
Heuel, Jeffrey P.; and Palisek, William F., to Interstate Industries, Inc. Electronic game casing. 259,267, 5-19-81, Cl. D21-13.000.
Hitachi, Ltd.: *See*—
Masatsugu, Shigeki; Miki, Tsutomu; and Misaka, Hirotsugu, 259,259, Cl. D14-5.000.
Hogreff, William E. Butterfly fish lure. 259,273, 5-19-81, Cl. D22-29.000.
Howey, John R.; and Abbott, J. Carl, Jr. Shelter. 259,282, 5-19-81, Cl. D25-18.000.
Humes, Darla L. Infant bath support. 259,274, 5-19-81, Cl. D23-52.000.
Interstate Industries, Inc.: *See*—
Heuel, Jeffrey P.; and Palisek, William F., 259,265, Cl. D21-13.000.
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, 259,266, Cl. D21-13.000.
Heuel, Jeffrey P.; and Palisek, William F., 259,267, Cl. D21-13.000.
Isaacs, Harold. Torque applying hand tool. 259,236, 5-19-81, Cl. D8-82.000.
Itakura, Hitoshi, to Tomy Kogyo Co., Inc. Amusement toy. 259,268, 5-19-81, Cl. D21-59.000.
J. L. Prescott Co.: *See*—
Brandt, Hugh J. W.; and Murray, Donald, 259,246, Cl. D9-404.000.
Jones, Robert E.: *See*—
Malafouris, Dannie O.; and Jones, Robert E., 259,276, Cl. D23-95.000.
King-Seeley Thermos Co.: *See*—
Tarozzi, Richard A., 259,232, Cl. D7-61.000.
Kozlow, William, Sr. Drinking cup lid for dispensing solid medication. 259,231, 5-19-81, Cl. D7-40.000.
Kushnir, Richard A. Curling stone. 259,271, 5-19-81, Cl. D21-203.000.
Lady, Charles S. Rug or similar article. 259,229, 5-19-81, Cl. D6-210.000.
Lester, Roy J. Razor holding rack. 259,226, 5-19-81, Cl. D6-88.000.
Levin, Gary M. Railroad restaurant. 259,281, 5-19-81, Cl. D25-11.000.
Louis Marx & Co., Inc.: *See*—
Bretschger, Edward B.; and Routzong, James R., 259,269, Cl. D21-124.000.
Lynch, Paul C.; and Driver, Ervin M. Pipe hanger. 259,241, 5-19-81, Cl. D8-363.000.
M & M Luggage Co., Inc.: *See*—
Stark, Ted, 259,222, Cl. D3-71.000.
Stark, Ted, 259,223, Cl. D3-71.000.
MacLaren, David S. Aerator motor assembly for a sewer system. 259,261, 5-19-81, Cl. D15-7.000.
Malafouris, Dannie O.; and Jones, Robert E. Fireplace forced air heating apparatus. 259,276, 5-19-81, Cl. D23-95.000.
Mark, Samuel. Building. 259,280, 5-19-81, Cl. D25-5.000.
Masatsugu, Shigeki; Miki, Tsutomu; and Misaka, Hirotsugu, to Hitachi, Ltd. Combined cassette tape recorder, radio and television receiver. 259,259, 5-19-81, Cl. D14-5.000.
McCaw, Michael R.; and Sullivan, Michael P., to Shiley Inc. Tubing connector for blood and other medical applications. 259,278, 5-19-81, Cl. D24-53.000.
McDermott, Theodore V. Ventilator housing. 259,277, 5-19-81, Cl. D23-151.000.
Megna, Salvatore J. Styling attachment for blow dryer. 259,284, 5-19-81, Cl. D28-18.000.
Menzies, John I.; and Menzies, Maureen. Portable burglar alarm. 259,255, 5-19-81, Cl. D10-106.000.
Menzies, Maureen: *See*—
Menzies, John I.; and Menzies, Maureen, 259,255, Cl. D10-106.000.
Miki, Tsutomu: *See*—
Masatsugu, Shigeki; Miki, Tsutomu; and Misaka, Hirotsugu, 259,259, Cl. D14-5.000.
Misaka, Hirotsugu: *See*—
Masatsugu, Shigeki; Miki, Tsutomu; and Misaka, Hirotsugu, 259,259, Cl. D14-5.000.
Mitchell, Richard L.: *See*—
Dibbern, John E., Jr.; Somers, Robert I.; Schafebook, Richard A.; and Mitchell, Richard L., 259,235, Cl. D8-66.000.
Murray, Donald: *See*—
Brandt, Hugh J. W.; and Murray, Donald, 259,246, Cl. D9-404.000.
Myron, Clayton E. Boat bow roller. 259,240, 5-19-81, Cl. D8-356.000.
National Service Industries, Inc.: *See*—
Grecol, Paul S., Jr., 259,244, Cl. D8-380.000.
Nelson, Kenneth R., to Schlage Lock Company. Display box. 259,253, 5-19-81, Cl. D9-418.000.
Palisek, William F.: *See*—
Heuel, Jeffrey P.; and Palisek, William F., 259,265, Cl. D21-13.000.
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, 259,266, Cl. D21-13.000.
Heuel, Jeffrey P.; and Palisek, William F., 259,267, Cl. D21-13.000.
Pfeil, Frank N. Flameless heat gun. 259,234, 5-19-81, Cl. D8-30.000.
Radke, Lee: *See*—
Heuel, Jeffrey P.; Palisek, William F.; and Radke, Lee, 259,266, Cl. D21-13.000.
Riviana Foods Inc.: *See*—
Duffey, Thomas E.; and Ulanoff, Claire R., 259,272, Cl. D22-19.000.
Routzong, James R.: *See*—
Bretschger, Edward B.; and Routzong, James R., 259,269, Cl. D21-124.000.
Savnik, Davorin, to UNIOR kovaska industrija Zrece. Handle for a shank-type tool. 259,237, 5-19-81, Cl. D8-83.000.
Schafebook, Richard A.: *See*—
Dibbern, John E., Jr.; Somers, Robert I.; Schafebook, Richard A.; and Mitchell, Richard L., 259,235, Cl. D8-66.000.
Scheer, Lewis R. Urinal deflector. 259,225, 5-19-81, Cl. D6-86.000.
Schenck, John F., III. Garment carrier handle. 259,238, 5-19-81, Cl. D8-307.000.
Schlage Lock Company: *See*—
Nelson, Kenneth R., 259,253, Cl. D9-418.000.
Schuldt, Gerhard, to Bielefelder Elektronik und Apparatebau GmbH. Cash register. 259,264, 5-19-81, Cl. D18-4.000.
Schweiger Industries, Inc.: *See*—
Sonnenleiter, George R., 259,224, Cl. D6-63.000.
Sendecki, Steve. Accessory handle. 259,262, 5-19-81, Cl. D16-47.000.
Shiley Inc.: *See*—
McCaw, Michael R.; and Sullivan, Michael P., 259,278, Cl. D24-53.000.
Simpson Manufacturing Co., Inc.: *See*—
Gilb, Tyrell T., 259,242, Cl. D8-373.000.
Small, Larry K.; and Collins, Thomas H. Wrist band with pocket. 259,220, 5-19-81, Cl. D2-400.000.
Snyder, Delbert H. Rotatable rack for condiment containers. 259,230, 5-19-81, Cl. D7-2.000.
Somers, Robert I.: *See*—
Dibbern, John E., Jr.; Somers, Robert I.; Schafebook, Richard A.; and Mitchell, Richard L., 259,235, Cl. D8-66.000.
Sonnenleiter, George R., to Schweiger Industries, Inc. Seat or similar article. 259,224, 5-19-81, Cl. D6-63.000.
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 259,222, 5-19-81, Cl. D3-71.000.
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 259,223, 5-19-81, Cl. D3-71.000.
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Givner, Morris L.; and Tiffany, Douglas, 259,254, Cl. D10-81.000.
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Itakura, Hitoshi, 259,268, Cl. D21-59.000.
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Duffey, Thomas E.; and Ulanoff, Claire R., 259,272, Cl. D22-19.000.
UNIOR kovaska industrija Zrece: *See*—
Savnik, Davorin, 259,237, Cl. D8-83.000.
Valerio, Robert M. Terminal post for a side terminal battery. 259,258, 5-19-81, Cl. D13-10.000.

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Cottage Gardens, Inc., The: *See*—
Meivogel, Simon P., 4,718, Cl. 57.000.
Duffett, William E.: *See*—
Meek, Jack M.; and Duffett, William E., 4,722, Cl. 82.000.
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CLASSIFICATION OF PATENTS

ISSUED MAY 19, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

409 4,267,607

CLASS 3

1.91 4,267,608

CLASS 4

580 4,267,609

CLASS 5

60 4,267,610
453 4,267,611

CLASS 6

4 B 4,267,612
10 4,267,613

CLASS 8

137 4,268,262
149 4,268,263
410 4,268,264
438 4,268,265
543 4,268,266
549 4,268,267
685 4,268,668

CLASS 9

4 R 4,267,614
310 E 4,267,615

CLASS 13

20 4,268,708

CLASS 15

182 4,267,616
320 4,267,617
339 4,267,618

CLASS 16

48.5 4,267,619

CLASS 19

239 4,267,620

CLASS 23

230 B 4,268,268
230 M 4,268,269
230.3 4,268,270

CLASS 24

205.11 R 4,267,621
274 WB 4,267,622

CLASS 27

2 4,267,623

CLASS 29

25.15 4,267,624
148.4 A 4,267,625
163.5 F 4,267,626
217 4,267,627
235 4,267,628
407 4,267,629
411 4,267,630
426.1 4,267,631
571 4,267,632
578 4,267,633
620 4,267,634
622 4,267,635

CLASS 30

90.3 4,267,636
94 Re.30,613

CLASS 33

1 G 4,267,637
27 C 4,267,638
172 R 4,267,639
361 4,267,640
365 4,267,641
473 4,267,642

CLASS 34

48 4,267,643
110 4,267,644
213 4,267,645

CLASS 35

19 A 4,267,647

CLASS 36

28 4,267,648
101 4,267,649
4,267,650
131 4,267,651

CLASS 37

66 4,267,652
142 A 4,267,653

CLASS 40

2 R 4,267,654
159 4,267,655
352 4,267,656
549 4,267,657

CLASS 43

42.06 4,267,658
43.12 4,267,659
96 4,267,660

CLASS 44

1 R 4,268,271
3 R 4,268,272
35 4,268,273

CLASS 46

1 K 4,267,661
25 4,267,662
254 4,267,663

CLASS 47

1.1 4,267,664
26 4,267,665

CLASS 48

111 4,268,274
4,268,275

CLASS 49

63 4,267,666
252 4,267,667
349 4,267,668

CLASS 51

5 D 4,267,669
101 R 4,267,670
135 BT 4,267,671
284 R 4,267,672
295 4,268,276

CLASS 52

97 4,267,673
115 4,267,674
118 4,267,675
167 4,267,676
242 4,267,677
302 4,267,678
311 4,267,679
384 4,267,680
657 4,267,682
664 4,267,681

CLASS 53

331.5 4,267,683
472 4,267,684

CLASS 54

1 4,267,685

CLASS 55

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16 4,268,278
4,268,279
54 4,268,280
92 4,268,281
101 4,268,282
189 4,268,283
269 4,268,284
271 4,268,285
278 4,268,286
306 4,268,287
337 4,268,288
486 4,268,289
521 4,268,290

CLASS 56

12.7 4,267,686
14.4 4,267,687
16.4 4,267,688
53 4,267,689
294 4,267,690

CLASS 57

58.54 Re.30,614

CLASS 59

85 4,267,691

CLASS 60

39.18 R 4,267,692
39.28 R 4,267,693
269 4,267,694
473 4,267,695
526 4,267,696
580 4,267,697
756 4,267,698

CLASS 62

66 4,267,699
70 4,267,700
86 4,267,701
115 4,267,702
117 4,268,291
123 4,267,703
158 4,267,704
195 4,267,705
256 4,267,706
514 R 4,267,707

CLASS 65

2 4,268,292
5 4,268,293
10 4,268,294
19 4,268,295
90 4,268,296
104 4,268,297
327 4,268,298

CLASS 66

56 4,267,708
87 4,267,709
196 4,267,710

CLASS 68

12 R 4,267,711
205 R 4,267,712

CLASS 69

24 4,267,713
32 4,267,714

CLASS 70

58 4,267,715
70 4,267,716
366 4,267,717

CLASS 71

76 4,268,299
4,268,300
90 4,268,301

CLASS 72

59 4,267,718
122 4,267,719
205 4,267,720

CLASS 73

1 G 4,267,721
10 4,267,722
61.4 4,267,723
151 4,267,726
4,267,727
172 4,267,728
425.4 P 4,267,729
462 4,267,730
505 4,267,731
606 4,267,732
650 4,267,733
4,267,734
862.65 4,267,724
4,267,725

CLASS 74

5.22 4,267,736
5.47 4,267,737
5.7 4,267,735
8 4,267,738
10.33 4,267,739
128 4,267,740
339 4,267,741
471 XY 4,267,742
473 SW 4,267,743
475 4,267,744
476 4,267,745
489 4,267,746
526 4,267,747
529 4,267,748
690 4,267,749
866 4,267,750

CLASS 75

0.5 AA 4,268,302
34 4,268,303
36 4,268,304
48 4,268,305
81 4,268,306
101 R 4,268,307
171 4,268,308
230 4,268,309

CLASS 76

25 A 4,267,751

CLASS 83

74 4,267,752
124 4,267,753
187 4,267,754
423 4,267,755
463 4,267,756
464 4,267,757
571 4,267,758
665 4,267,759
835 4,267,760

CLASS 84

1.01 4,267,761
1.03 4,267,762
1.22 4,267,763

CLASS 89

25 4,267,764

CLASS 91

186 4,267,765
369 A 4,267,766
404 4,267,767

CLASS 98

33 A 4,267,769

CLASS 100

122 4,267,770

CLASS 101

40 4,267,771
103 4,267,772
123 4,267,773

CLASS 102

201 4,267,774
208 4,267,775
215 4,267,776

CLASS 104

7 R 4,267,777
94 4,267,778
247 4,267,779

CLASS 106

38.35 4,268,310
45 4,268,311
47 Q 4,268,312
54 4,268,313
65 4,268,314
84 4,268,315
97 4,268,316
98 4,268,317
277 4,268,318
288 B 4,268,319
4,268,320

CLASS 108

52.1 4,267,780
56.1 4,267,781

CLASS 111

7.1 4,267,782
52 4,267,783

CLASS 112

80 4,267,784
121.12 4,267,785
168 4,267,786
266.2 4,267,787

CLASS 114

45 4,267,788
65 R 4,267,789
106 4,267,790
4,267,791
219 4,267,792

CLASS 116

324 4,267,793

CLASS 118

50 4,267,794
302 4,267,795
658 4,267,796
4,267,797

CLASS 119

3 4,267,798
29 4,267,799
72.5 4,267,800

CLASS 122

4 D 4,267,801

CLASS 123

146.5 A 4,267,803
179 K 4,267,804
198 E 4,267,805
287 4,267,806
323 4,267,807
367 4,267,808
409 4,267,809
416 4,267,810
432 4,267,811
523 4,267,802
570 4,267,812
609 4,267,813

CLASS 125

15 4,267,814

CLASS 126

39 G 4,267,815
41 R 4,267,816
60 4,267,817
121 4,267,818
285 B 4,267,819
351 4,267,820
417 4,267,821
4,267,822
422 4,267,823
426 4,267,824
433 4,267,825
440 4,267,826

CLASS 128

1.1 4,267,827
6 4,267,828
79 4,267,829
87 R 4,267,830
203.14 4,267,831
205.24 4,267,832
214 E 4,267,835
214 F 4,267,833
4,267,834
215 4,267,836
275 4,267,837
303 A 4,267,839
303 R 4,267,838
303.13 4,267,840
305 4,267,841
334 R 4,267,842
419 PT 4,267,843
633 4,267,844
721 4,267,845
765 4,267,846

CLASS 131

84 R 4,267,849
275 4,267,847
304 4,267,848

CLASS 132

9 4,267,850
33 R 4,267,851
73 4,267,852

CLASS 136

205 4,268,710
247 4,268,709
256 4,268,711

CLASS 137

67 4,267,853
72 4,267,854
85 4,267,855
119 4,267,856
4,267,857
529 4,267,858
550 4,267,859
596.2 4,267,860
625.48 4,267,861
625.64 4,267,862

CLASS 138

109 4,267,863

CLASS 139

420 R 4,267,864

CLASS 140

92.94 4,267,865

CLASS 141

1 4,267,866

CLASS 148

1.5 4,268,321
12.7 A 4,268,322
15.5 4,268,323
31.5 4,268,324
108 4,268,325
113 4,268,326
171 4,268,327
187 4,268,328

CLASS 150

11 4,267,868
50 4,267,869

CLASS 152

189 4,267,871
209 D 4,267,872
339 4,267,873
361 FP Re.30,615

CLASS 156

51 4,268,329
111 4,268,330
145 4,268,331
160 4,268,332
161 4,268,333
187 4,268,334
218 4,268,335
244.13 4,268,336
244.17 4,268,337
251 4,268,338
272 4,268,339
296 4,268,340
352 4,268,341
357 4,268,342
361 4,268,343
383 4,268,344
499 4,268,345
510 4,268,346
628 4,268,347
645 4,268,348
656 4,268,349

CLASS 157

17 4,267,867

CLASS 160

92 4,267,874
176 R 4,267,875
392 4,267,876

CLASS 162

29 4,268,350
146 4,268,351
191 4,268,352

CLASS 164

155 4,267,877
187 4,267,878

CLASS 165

1 4,267,879
41 4,267,880
45 4,267,881
83 4,267,882
129 4,267,883
179 4,267,884

CLASS 166

250 4,267,885
273 4,267,886
300 4,267,887
312 4,267,888

CLASS 169

61 4,267,889
75 4,267,890

CLASS 172

28 4,267,891

CLASS 173

43 4,267,892

CLASS 174

50.63 4,268,712
52 PE 4,268,713
108 4,268,714

CLASS 175

65 4,267,893

CLASS 176

3 4,268,353
19 EC 4,268,354
30 4,268,355
78 4,268,356
4,268,357

CLASS 177

25 4,267,894

CLASS 178

22 4,268,715

CLASS 179

1 CN 4,268,716
1 E 4,268,718
4,268,719
1 J 4,268,717
1.5 R 4,268,720
2 C 4,268,721
2 EB 4,268,722
81 R 4,268,723
111 E 4,268,725
164 4,268,726
170.2 4,268,727

CLASS 180

54 A 4,267,895
73 R 4,267,896
143 4,267,897
205 4,267,898

CLASS 181

272 4,267,899

CLASS 182

13 4,267,900

CLASS 187

8.54 4,267,901

CLASS 188

62 4,267,902
72.6 4,267,903
73.3 4,267,904

CLASS 190

13 R 4,267,905

CLASS 191

49 4,267,906

CLASS 192

3.56 4,267,907
8 C 4,267,908
4,267,909
17 R 4,267,910
18 A 4,267,911
53 F 4,267,912
98 4,267,913
147 4,267,914

CLASS 194

1 N 4,267,915
102 4,267,916

CLASS 198

457 4,267,917
472 4,267,918
756 4,267,919
842 4,267,920
847 4,267,921
851 4,267,922

CLASS 200

16 R 4,268,728
50 B 4,268,729
52 R 4,268,730
67 AA 4,268,731
148 R 4,268,732
150 G 4,268,733
302 4,268,734
314 4,268,735

CLASS 201

9 4,268,358
31 4,268,359

CLASS 202

270 4,268,360

CLASS 203

9 4,268,361
28 4,268,362

CLASS 204

39 4,268,363
43 Z 4,268,364
98 4,268,365
4,268,366
149 4,268,367
181 C 4,268,368
192 D 4,268,369
195 P 4,268,370
196 4,268,371
252 4,268,372
4,268,373
298 4,268,374

CLASS 206

5 4,267,923
87 4,267,924
221 4,267,925
268 4,267,926
443 Re.30,616
524 4,267,927
583 4,267,928
603 4,267,929

CLASS 208

72 4,268,375
120 4,268,376
139 4,268,377
254 R 4,268,378

CLASS 209

3.1 4,267,930
5 4,268,379
167 4,268,380
273 4,268,381
4,268,382

CLASS 210

103 4,268,383
133 4,268,384
150 4,268,385
169 4,268,386
4,268,387
180 4,268,388
195.3 4,268,389
232 4,268,390
236 4,268,391
238 4,268,392
516 4,268,393
525 4,268,394
634 4,268,395
670 4,268,396
746 4,268,397
758 4,268,398
762 4,268,399

CLASS 211

153 4,267,931

CLASS 212

92 4,267,932
108 4,267,933
184 4,267,934

CLASS 213

72 4,267,935

CLASS 219

8.5 4,268,736
10.49 R 4,268,737
10.55 F 4,268,738
56.1 4,268,739
137.51 4,268,740
225 Re.30,618
439 4,268,741
506 Re.30,619
532 4,268,742

CLASS 220

85 SP 4,267,941
262 4,267,936
267 4,267,937
268 4,267,938
318 4,267,939
321 4,267,940

CLASS 221

2 4,267,942

CLASS 222

1 4,267,943
5 4,267,944
83.5 4,267,945
345 4,267,946
399 4,267,947

CLASS 224

42.34 4,267,948

CLASS 225

106 4,267,949

CLASS 226

146 4,267,950
195 4,267,951

CLASS 227

8 Re.30,617
9 4,267,952

CLASS 228

118 4,267,953
173 D 4,267,954

CLASS 229

16 R 4,267,955
30 4,267,956
37 R 4,267,957
44 CB 4,267,958
52 B 4,267,959
55 4,267,960

CLASS 232

15 4,267,962

CLASS 233

1 B 4,267,963
21 4,267,964

CLASS 235

130 R 4,268,743
375 4,268,744

CLASS 236

1 G 4,267,965
46 A 4,267,966
49 4,267,967
4,267,968

CLASS 238

8 4,267,969
310 4,267,970

CLASS 239

11 4,267,971
66 4,267,972
73 4,267,973
74 4,267,974
83 4,267,975
102 4,267,976
132.3 4,267,977
193 4,267,978
419 4,267,979

CLASS 241

20 4,267,980
30 4,267,981
257 R 4,267,982

CLASS 242

35.6 E 4,267,983
56.4 4,267,984
4,267,985
199 4,267,986

CLASS 244

2 4,267,987
3.16 4,267,988
31 4,267,989
52 4,267,990
63 4,267,991
103 R 4,267,992

CLASS 248

27.1 4,267,993
65 4,267,994
74 R 4,267,995
97 4,267,996
4,267,997
165 4,267,998
418 4,267,999
467 4,268,000

CLASS 249

58 4,268,001
127 4,268,002
142 4,268,003

CLASS 250

223 R 4,268,746
226 4,267,961
231 SE 4,268,747
255 4,268,748
269 4,268,749
315.1 4,268,750
343 4,268,751
353 4,268,752
357 4,268,753
391 4,268,754
506 4,268,755
551 4,268,756

CLASS 251

5 4,268,004
4,268,005
11 4,268,006
30 4,268,007
44 4,268,008
138 4,268,009
144 4,268,010

CLASS 252

8.5 C 4,268,400
8.55 D 4,268,403
8.8 4,268,401
4,268,402
25 4,268,404
70 4,268,405
105 4,268,406
171 4,268,407
182 4,268,408
301.1 W 4,268,409
312 4,268,410
316 4,268,411
373 4,268,412
408 4,268,413
412 4,268,414
413 4,268,415
416 4,268,416
421 4,268,417
429 B 4,268,418
430 4,268,419
4,268,423
432 4,268,420
441 4,268,421
461 4,268,422
546 4,268,424

CLASS 254

29 A 4,268,011
223 4,268,012
392 4,268,013

CLASS 260

19 A 4,268,425
22 TN 4,268,426
23.7 C 4,268,427
28.5 AS 4,268,428
37 PC 4,268,429
37 R 4,268,430
37 SB 4,268,452
40 R 4,268,431
45.75 B 4,268,432
112 R 4,268,434
4,268,435
141 4,268,436
4,268,437
158 4,268,438
205 4,268,439
239.3 A 4,268,440
239.5 4,268,441
326.2 4,268,442
340.3 4,268,443
340.7 4,268,444
345.2 4,268,445
345.5 4,268,446
346.11 4,268,447
346.75 4,268,448
347.3 4,268,449
349 4,268,450
376 4,268,451
397.5 4,268,453
439 R 4,268,454
448 R 4,268,455
455 R 4,268,456
544 P 4,268,457
927 R 4,268,459

CLASS 261

1 4,268,460
39 B 4,268,461
40 4,268,462

CLASS 264

22 4,268,463
4,268,464
25 4,268,465
42 4,268,466
111 4,268,467
131 4,268,468
138 4,268,469
229 4,268,471
230 4,268,472
234 4,268,473
252 4,268,474
315 4,268,475

CLASS 266

165 4,268,014
236 4,268,015
4,268,016
265 4,268,017

CLASS 267

120 4,268,018

CLASS 269

43 4,268,019
88 4,268,020

CLASS 271

4 4,268,021
7 4,268,022
94 4,268,023
95 4,268,024
112 4,268,025
121 4,268,026
153 4,268,027
201 4,268,028

CLASS 272

3 4,268,029
77 4,268,030
128 4,268,031
137 4,268,032

CLASS 273

2 4,268,033
63 C 4,268,034
186 A 4,268,035
316 4,268,036
359 4,268,037
416 4,268,038

CLASS 277

1 4,268,040
4,268,041
4,268,042
34 4,268,043
59 4,268,044
121 4,268,045
139 4,268,046
207 A 4,268,047

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5 A 4,268,048
33.99 H 4,268,049
38 4,268,050
145 4,268,051
153 R 4,268,052
154 4,268,053
242 WC 4,268,054
278 4,268,055
456 A 4,268,056
474 4,268,057
481 4,268,058
604 4,268,059
605 4,268,060
4,268,061
611 4,268,062
615 4,268,063
625 4,268,064
737 4,268,065
763 4,268,066
802 4,268,067
804 4,268,068

CLASS 282

27.5 4,268,069

CLASS 285

15 4,268,070
18 4,268,071
112 4,268,072

CLASS 290

53 4,268,757

CLASS 292

113 4,268,073
149 4,268,074
167 4,268,075
216 4,268,076
336.3 4,268,077

CLASS 293

120 4,268,078
4,268,079

CLASS 294

1 R 4,268,080
55 4,268,081
88 4,268,082

CLASS 296

10 4,268,083
148 4,268,084
217 4,268,085

CLASS 297

63 4,268,086
273 4,268,087

CLASS 299

11 4,268,088
87 4,268,089

CLASS 301

5 BA 4,268,090
37 R 4,268,091

CLASS 303

22 R 4,268,092
89 4,268,093

CLASS 307

105 4,268,758
264 4,268,761
268 4,268,762
354 4,268,764
490 4,268,759
562 4,268,760
605 4,268,763

CLASS 308

9 4,268,094
10 4,268,095
15 4,268,096

CLASS 310

11 4,268,765
53 4,268,767
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		259,223		82	259,236		318	259,250	D16—	47	259,262	D23—	52	259,274			259,286
D6—	63	259,224		83	259,237			259,251		48	259,263		94	259,275			259,287
	86	259,225		307	259,238		338	259,252	D18—	4	259,264		95	259,276			259,289
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	40	259,231		380	259,244		188	259,257		198	259,270		18	259,282	D99—	50	259,294
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